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OCT 6 1925

October 3, 1925

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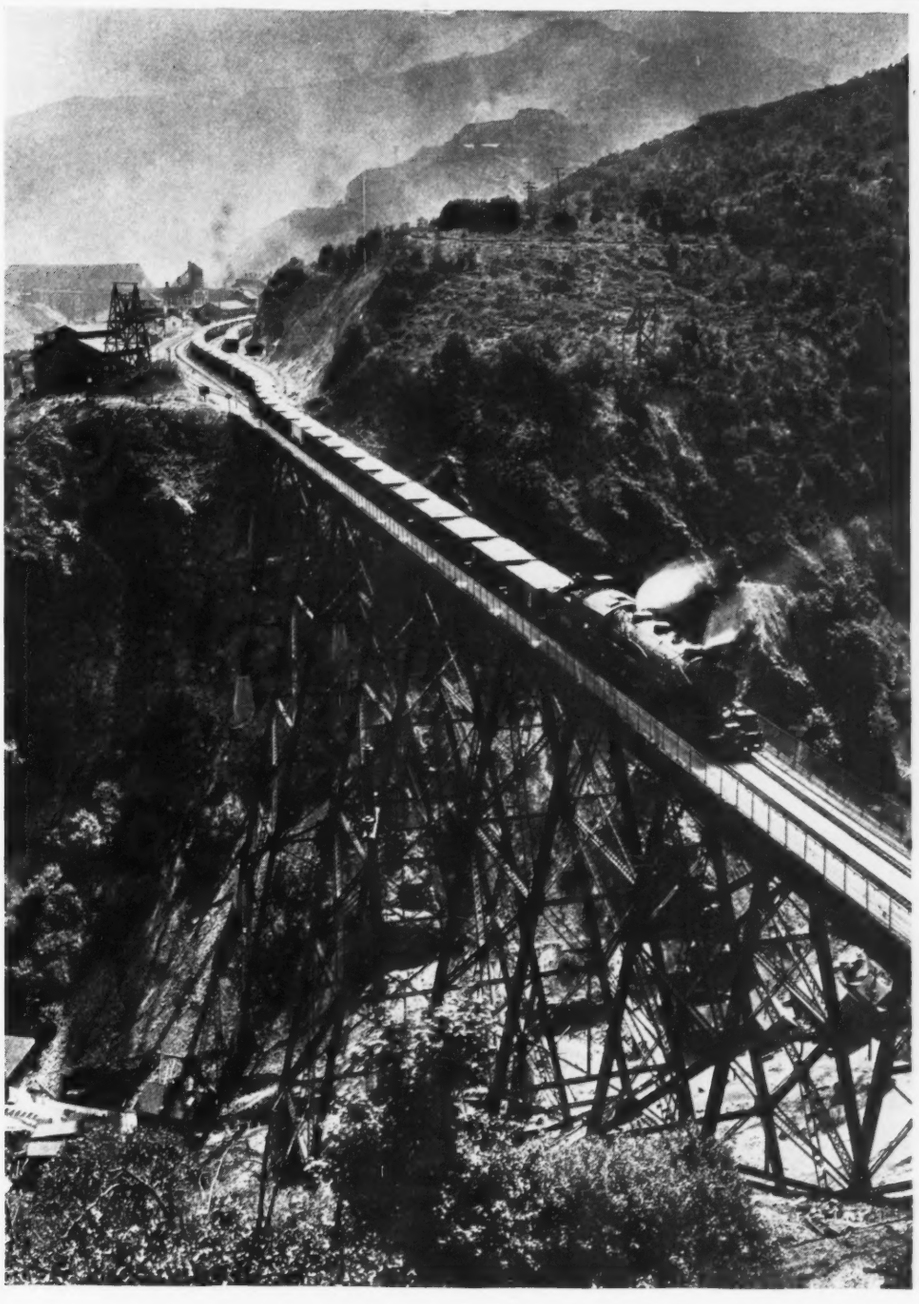

Between 400 and 500 80-ton cars of ore are hauled over this 19-mile railroad daily from Bingham Canyon to the Utah Copper Company's two mills on Great Salt Lake

Mining Companies and the Capital-Stock Tax: A Study of the Peculiar Character of This Impost
Diamonds and Bauxite Mining Active in British Guiana: *A Review*, by Lloyd Tilghman Emory
Discussion: Veindikes of the Engineer Mine, by H. C. Boydell — Depression in Australian Mining, by H. R. Sleeman

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ENGINEERING AND
MINING JOURNAL-PRESS

JOSIAH EDWARD SPURR, Editor

Volume 120 | New York, October 3, 1925 | *Number* 14

The Aluminum Trust

THE Federal Trade Commission has issued a formal complaint against the Aluminum Company of America, charging a monopoly in violation of the anti-trust laws. The complaint of the Commission refutes a statement made by Mr. Mellon, Secretary of the Treasury and the dominant figure in the Aluminum Company of America, that "no monopoly in the aluminum industry exists." The Federal Trade Commission has been reorganized and is now a thoroughly republican body, and a representative of the Administration. The Commission reports that the Aluminum Company of America is the sole producer of virgin aluminum ingots in the United States, and has produced since 1923 over 95 per cent of the virgin sheet aluminum; that it owns 36 per cent of the stock of the Aluminum Goods Manufacturing Co., the largest manufacturer of aluminum cooking utensils in the United States, and 100 per cent of the United States Aluminum Co., the second largest manufacturer—the two companies producing not less than 65 per cent of the total United States output of cooking utensils.

It is not surprising that the Federal Trade Commission has started an investigation of the Aluminum Company of America. The surprising thing is that the well-known monopoly has been so long ignored—an omission which must have been due to reluctance to disturb the respectable and powerful interests who own the company. That the company is a monopoly—the finest and purest example of a trust in the United States—nobody has ever questioned. The Commission has gone further and investigated the predominance of the company of the aluminum manufacture of the world, as hinted by its monopoly of Canadian manufacture and its dominance in Norway.

As to Secretary Mellon's denial, one is tempted to exclaim "Fi!" The categoric denial doubtless is familiar and usual in those legal and diplomatic circles where Mr. Mellon moves; and does not rank as a whopper.

Mr. Mellon is justly liked and respected. He is a great American, who is serving his country arduously and to its immense benefit with his great abilities and his stalwart integrity. One must needs feel apologetic about referring to his little Trust, which he built up to world dominion before taking over the United States. There is nothing unusual about his Trust; but it is strikingly opposed to the Sherman Act; an act which is not so much revered from cover to cover as it used to be, and which a large sentiment among business men would repeal. It *was* a bit thick, as they would remark in England, when the Fordney Tariff placed a tariff on aluminum and aluminum goods, with the Aluminum Company of America the sole beneficiary, and the money coming out of the pockets of the whole American people for its benefit. Something of our individual money has gone into Mr. Mellon's pocket thereby; nevertheless, we are well content, for he has saved us money on the other hand, through sound and unselfish fiscal administration and reduction of taxes; so that we are for him as a benevolent business and political despot. He is one of the strong and upright men of the present Administration—one of the trio, Coolidge, Hoover, and Mellon—which the country inspects with satisfaction. And the Republican party having been forced to visualize the fact that he controls an almost perfect Trust, it will be highly interesting to watch subsequent movements.

What are you going to do about it, gentlemen?

Human Standardization

THE MULTIFOLD RESEMBLANCE of man to those humbler primates, the apes, poor relations which a great mass of the less developed of our people indignantly renounce, is exhibited for one thing in the habit of mimicking. The "aping" of one man by another, of one woman by another, and so on indefinitely, is one of the fundamental laws of society; in the end it results in mass resemblance, in uniformity, in standardization. Fashion is based upon this, especially remarkable in women's apparel. Let some cunning ringleader in Paris start out with a new style of skirt or headgear, and the women of six continents rush to imitate. In men's clothing this has resulted in a definite standardization, so that the citizen of New York and the citizen of Calgary or of Vienna are as like as two peas in a pod. Gone are the picturesque national costumes which in the past marked the difference between sections and occupations. The Chinaman has cut off his queue and the carpenter goes to work in a white collar. The countryman is becoming as urban and as urbane as the dweller in the metropolis. This process is one of the results of the present age of mechanical development, of easy and quick communication and transfer. The standardization, first expressed in clothes and haircuts, is in process also in manners and thought. The lack of universal speech is the greatest obstacle to the latter, but this chasm will doubtless be crossed in time.

Meantime the standardization of all things we use goes on intensively. Art gives way to mass production, in which whatever artistry is used is mimicked from the lone masters of the past. For the cruder processes of production this is probably an advantage almost without drawback, since thus raw materials and common or standard articles are produced so cheaply as to be accessible to all; and thus the comforts, if not the contentment, of mankind are increased. The tendency in the production of articles of luxury has greater and greater drawbacks. Furniture dealers dwell on Sheraton and Phyfe, art dealers on Velasquez and Rubens; not on the product of the present age of wealth and intensive training. Masterpieces of literature mark

the past periods of poor mechanical devices and mediocre comforts, rather than the recent time of universal speed and easy money. Standardization of nuts and bolts, of tracks and mine cars, of pumps and drills, for example, is a fine thing; standardization of the thoughts of those who use them is more debatable. Variation breeds many degrees of progress and growth, and makes for evolution, as Darwin and Huxley have taught us; standardization, carried too far, results in frozen progress—in a perfect organization that remains fixed for all time. Consider the ant and the bee, those perfect examples of standardization and communism. There was a time when the insects, not man, bade fair to rule the world; the insects are far more highly and deftly constituted physically.

Mining men, more than most, remain individualists, due to the great variety of conditions which they have had to face—the great variety in the occurrence, nature, and tractability of ores; and this is one of the reasons why they are somewhat ill at ease in a world of mutual salesmen and after-dinner speakers. Let not, however, the good work of standardizing mine equipment, which will cut costs and increase profits, be delayed. Of course it will cut costs for my mine as well as yours, so that the net result will be a fall in the price of metal, which has been illustrated by the course of the price of copper; but since the large mines are of necessity largely standardized, the others must follow suit. But the men of the mining fraternity should nevertheless not strive to overcome their individualism: for the threatened loss of highly accented individualism is an unfavorable sign.

Growth of Direct Marketing

MARKETING OF GOODS in the United States has undergone an enormous change within the last few years, according to a survey made by the National Industrial Conference Board of New York. This revolution has introduced more direct sales from producer to retailer or even to consumer, in contradistinction to the indispensability of the long line of middlemen who marked the old-time marketing procedure. This change has been made possible by standardizing of product and price, and by national advertising. Improved freight service for large shipments, and the development of the "smooth highway" and the autotruck for small shipments have shortened the time necessary for the delivery from the factory to the ultimate consumer, and this has facilitated the dropping out of the jobber and the other middlemen. This change has released much capital formerly tied up in jobbers' stores.

In the substitution of standardized products and known brands for personal inspection and bargaining, intensive campaigns for publicity on makes, qualities and prices of the manufacturer have been carried out. All this has brought up new problems for the consideration of the Federal Trade Commission, and in the settlement of these problems the fast-multiplying trade associations are co-operating. Incidentally, the attitude of the government as well as the public has changed since the enaction of the anti-trust laws, in that there is less suspicion of business merely because it is big. Most of the orders of the Federal Trade Commission to cease unfair practices, the Conference Board points out, were addressed to small concerns.

In this growth, it may be added, the marketing of metal products is taking part. Most noticeable of these campaigns is that of the marketing of lead and zinc paints: but there are many other instances.

Terminology That Will Not Terminate

IN THE Tri-State zinc and lead district there are numerous oddities in mining terminology where "ore" is known as "dirt" and "concentrate" is called "ore." Now the question is asked, Are the terms "lead" and "lead ore" synonymous in this same district?

The basis for this question is a statement in the Miami *News Record* of Aug. 30, 1925, that in a mine on the Velie lease the drill cuttings assayed 87 per cent lead. Charles J. Williams, of the U. S. Geological Survey, called the mining editor's attention to this apparent error, stating that pure lead sulphide, galena, contains only 86.6 per cent lead. To this the editor replied:

> "Mr. Williams is absolutely correct from his viewpoint, but not from the viewpoint of an ore producer. Ore producers deal in concentrates and not in metal. Therefore, when drill records are made, the mineral contents are given in terms of zinc and lead ore concentrates contained in the cuttings and not in metallic contents. Some companies have their assay certificates of drill cuttings made in terms of metallic content, but these are always reduced to ore values when computing the richness of the cuttings, so the record of the drill hole will have to stand as carrying 87 per cent of lead ore for the number of feet given."

This does not yet tell us the exact richness of the deposit, for, if "ore" is "concentrate" in the Joplin district, the concentrate may vary as to the percentage of metallic lead it contains. The basis on which lead concentrate or "ore" is sold is 80 per cent metallic lead. Assuming that 87 per cent of the cuttings from the drill hole to which reference is made is a lead concentrate containing 80 per cent metallic lead, the lead content of the original drill cuttings would be 80 per cent of 87 per cent, or 69.6 per cent metallic lead, yet the *Record* says the cutting contained 87 per cent lead.

The confusion and misunderstanding are due to the improper use of terms and a lack of uniformity of use and definition. Now the question: Are "lead" and "lead ore" synonymous? Lead itself is a metal; ore is the rock containing the lead mineral—galena, cerussite or celestite—hence "lead ore." In Joplin the lead mineral is galena. It would therefore appear that these two terms "lead" and "lead ore" are not and cannot be considered as synonymous.

In this connection the definition of ore may be of interest. "*Ore*—A natural mineral compound of the elements of which one at least is a metal. A metalliferous mineral, or an aggregate of metalliferous minerals, more or less mixed with gangue." As a further refinement, and at the same time imposing a restriction on this definition, many authorities such as Kemp, Peele, Ihlseng, and others, add "and can be mined or treated at a profit." Thus material containing 40 or 50 per cent of iron would be classified as iron ore in Minnesota today, while a similar material containing only 20 per cent iron would be considered as waste. However, the mining companies realize that by refinement in processes of treatment and an increase in price of iron this material may become a *profitable* source of iron in the future. They are therefore storing this so-called waste as reserves for future supplies.

That which is waste today may be the chief ore as a source for future metal supplies.

The term "ore" in Cornwall, England, is applied to "copper ore," whereas "tin ore" is called "tin." In the Joplin-Miami lead-zinc district, any lead, zinc, or lead-zinc concentrate obtained from a milling process is called "ore," "lead ore," or "zinc ore." That which technicians and mining engineers term "ore" as defined above, the crude mineral aggregate as it comes from the ground, is called "dirt" in the Joplin-Miami district, whereas in the Wisconsin zinc district, the term "dirt" applies to both crude "ore" and "waste." In the Michigan copper district the crude "ore" is called "rock."

The definition of "concentrate" is now in order. "*Concentrate*—As a verb, to increase the strength by diminishing the bulk, as of a liquid or an ore; to separate metal or ore from the gangue or associated rock. As a noun, the term is applied to the product of the process of concentration or reduction, and is loosely used in the plural form." This product is called "ore" in Joplin and "mineral" in the Michigan copper country.

Even though technicians and engineers attempt to standardize the various terms used in industries, the best that lexicographers can do is to define terms as used in each locality or industry. The terms used in this instance have been discussed perennially in these columns, and at the time of going to press "ore" is called "dirt" and "concentrate" is called "ore" at Joplin, and will so continue until the deposits are exhausted.

Living Expenses in Belgium

LIVING EXPENSES for Americans in Belgium are reported in a circular of the Department of Commerce, and may be of interest to some of our readers. There are few modern apartment houses in Belgium, although these are becoming the predominant factor in American city life. The comparison of rents differs so enormously in different cities and towns in the United States that it is difficult to compare them with those in any other country. The circular, however, states that furnished houses "of six to nine master's rooms, besides kitchens, cellars, servants' rooms, etc., may be had for $1,200 to $1,800 annually, which seems somewhat below the average in American cities. It is, however, difficult to compare: at rentals such as the above, the phrase "master's rooms" in the United States has become old-fashioned. The "servants" (another term now employed with hesitation in the United States) have some years ago become the dictators, not to say the masters: and in thousands of prosperous, modest households, this has resulted in social revolution, and ejection of the dictator, with a migration to apartments as a place where American independence might be maintained—only perhaps to find new bonds of dependency upon the janitor and the next door neighbors. Other solutions have been adopted by those who cling to houses; so that European requirements for "masters" and servants are omitted in the modern-built modest homes, and fewer rooms and labor-saving devices are the substitutes. Electricity, gas, ready-cooked groceries and the delicatessen have taken the place of Katrinka: and they never take evenings off. The servant question is touched upon in the Commerce Department bulletin in question: In Belgium cooks receive seven to fourteen dollars a month: chambermaids, six to eight dollars. Even butlers can be had as low as fourteen dollars a month: and finally chauffeurs as low as twenty-nine dollars. Engineers out of a job, or tired or retired, or whose wives are weary of eating Chinese grub on the outskirts of mining camps might well consider a few months in Belgium: and by temporarily investing in two cooks (night and day) at say $10 per; two upstairs maids at $7 per; one butler and one chauffeur at $15 and $30 respectively (total $80 per month), manage to stick it out a month or two and enjoy the luxury of being undemocratic and unstandardized. When the grocery bills become pressing for this aggregation of retainers, engineer in question could avail himself of his return ticket, good for six months.

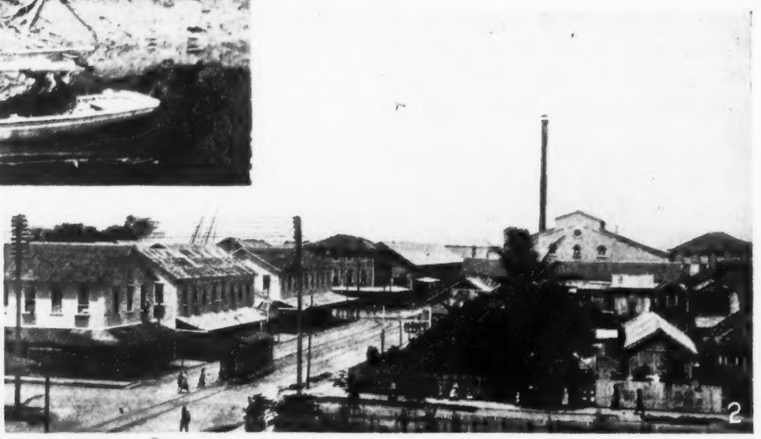
Hydration of Anhydrite

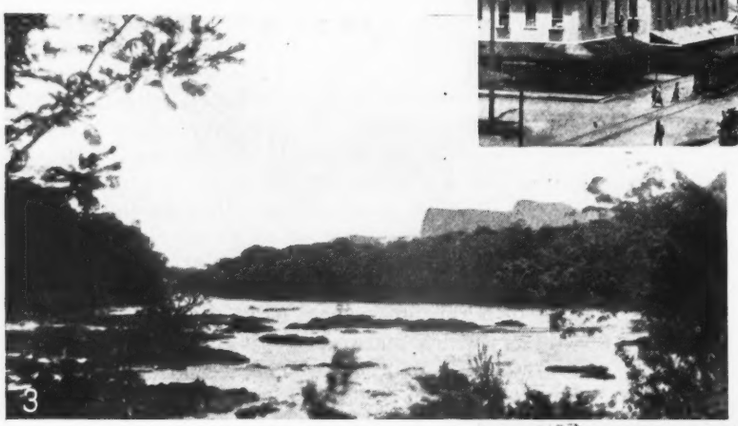
THE DEVELOPMENT of new uses of waste products, or modifications in their forms whereby they are better adapted for well-known uses, are important phases of modern industrial chemistry. The recent accomplishment of the Nonmetallic Minerals Experiment Station of the U. S. Bureau of Mines in working out a process for the hydration of anhydrite is a case in point. Anhydrite, either as an unwelcome product of gypsum mines, or as an equally troublesome chemical byproduct, is to quite an extent a white elephant on the miner's or manufacturer's hands. If hydrated to gypsum it could be used for any of the purposes for which natural gypsum is now so widely employed, but no successful commercial method has yet been devised for accomplishing this hydration. The process recently developed involves wet grinding to an extremely fine consistency, and agitation with water which automatically becomes part of the wet grinding process, though the latter may be supplemented by subsequent agitation. The rate of hydration increases very rapidly as the grain size diminishes, particularly when the particle diameter averages less than 7 or 8 microns. During laboratory tests complete hydration was attained in about three weeks. The gypsum thus formed was calcined to a high-grade plaster of paris having a strength well above the required standard.

The all-important question before gypsum miners and chemical manufacturers is the possibility of commercializing the process. Is the rate of hydration lately attained fast enough, or the cost of grinding and agitation low enough, to justify anhydrite utilization? While harder than gypsum, anhydrite is a relatively soft mineral that is easily ground, but, on the other hand, extremely fine grinding is in general a costly process.

Two favorable conditions point at least to the possibility of commercial success. The first is that complete hydration is unnecessary, as the accepted specifications for commercial gypsum require only 65 per cent $CaSO_4 2H_2O$. In the second place the grinding would not be as costly as might be expected in view of average grinding costs, because the latter usually include the cost of classification by size, while in this process no such classification is required. At least it has been demonstrated that hydration is possible, and thus a long step has been taken toward the development of a successful method. No doubt great interest will attach to any efforts made in practical application.

British Guiana as Seen Through Camera's Eye





1. River transportation in British Guiana. Noonday rest of an express boat. 2. A business street in the capital, Georgetown. 3. Typical scene on Potaro River. 4. Cottages for white employees of Demerara Bauxite Co. at Mackenzie. 5. Rough country along Potaro River, where gold dredges are working. 6. Demerara River—Typical topography in Wismar-Akyma bauxite field

Diamond and Bauxite Mining Active in British Guiana

Gold Production Decreasing—Improvement in Transportation Facilities Would Benefit All Industry and Assist Development

A Review of Conditions

By Lloyd Tilghman Emory
Consulting Engineer, 4 South 15th St., Philadelphia, Pa.

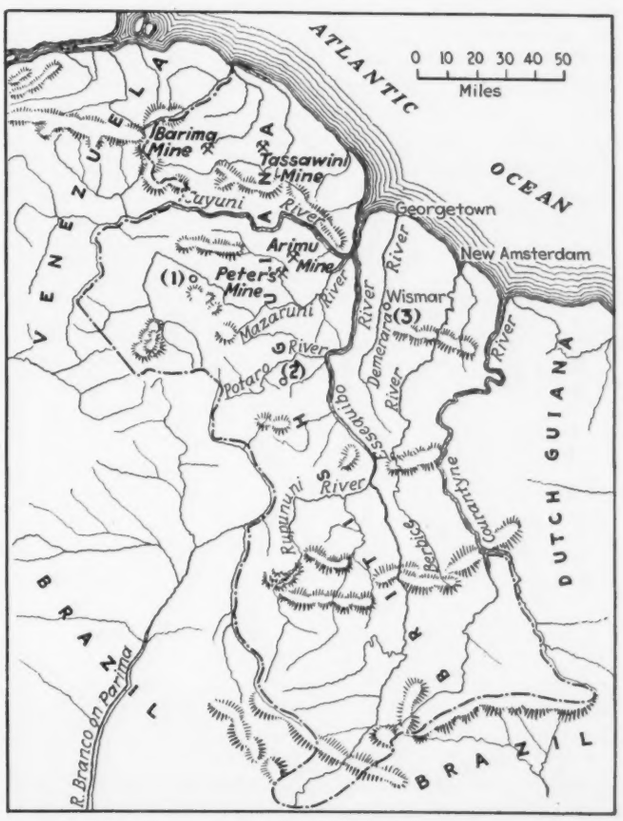
DIAMONDS, GOLD, AND BAUXITE constitute the mineral production of British Guiana at the present time. Other minerals undoubtedly exist in commercial quantities, but lack of transportation retards their development. Topographically, the country consists of a coastal plain, a band of foothills rising to an inland plateau region, and the hinterland, from which several mountains rise either singly or in groups to a maximum altitude of 8,600 ft. above sea level.

It is from the broken foothill area, deeply eroded by five great rivers and their cross-drainage streams, that the mineral wealth is derived. These same rivers both help and retard transportation between the coast and the interior. They help it because boats having a carrying capacity of four or five tons can be hauled up over the rapids, and they retard it for the reason that if this very inadequate means of transportation did not exist, roads would undoubtedly have been built. The broken topography of the foothill area, together with the dense tropical jungle with which it is covered, has discouraged road building where river transportation is available, even though the latter is costly in time and money.

There is not a single usable road, and there are only three almost impassable trails, into the interior. The only means of transportation is by boat, which is slow and laborious. Travel for days and even weeks in open boats, with drenching by tropical showers or scorching by the sun, with the most fatiguing labor on the part of the men who alternately paddle and haul the boats up the shoals, is not conducive to economy or health. Until a better method of transportation can be developed, it is hardly possible that there will be any marked enlargement of the scale of operations in the diamond fields.

In January, a British syndicate in which the Parent Tyre Co., Ltd., and the British Guiana Mining & Trading Co., Ltd., are interested, approached the local government with an offer to build a railway around the rapids in the Mazaruni River, a distance of about 60 miles, to open up the diamond fields. However, in return it asked for a considerable area of unstaked mining territory, and, inasmuch as the government thought it asked too much, the matter is still under negotiation.

The Real Daylight Balata Co. began an air service several months ago to transport needed supplies to its concessions in the interior and to bring sick employees away when necessary. Its single plane has been in operation between Georgetown, on the coast, and the company's magazine at Apoteri, in the Rupununi district, a distance of over 200 miles, since the latter part of February. The machine is a little three-seater of the Fairey type, constructed almost



Map of British Guiana. 1, Kamakusa, center of diamond area. 2, Konawaruk, center of gold area. 3, Mackenzie, center of bauxite industry

entirely of aluminum and fitted with a Rolls-Royce Eagle No. 9 engine. It takes a little over three hours to make the trip, which by boat requires from two to three weeks. Although the Balata company is not a mining company, balata being a rubber without a snap —chicle—obtained from the sap of a forest tree (*Bumelia retusa*), its transportation problems are similar to those of the mining companies.

As diamonds, gold, and bauxite are worked under different conditions in different parts of the country, it is easier to describe them separately.

One of the interesting features of the diamond situation in British Guiana is that the local industry is

A still stretch of river on way to diamond field

not controlled by the large syndicates, even although the production in 1923 amounted to 10 per cent of the South African output. Unless the government makes a radical change in its present policy, which is against large holdings or the tying up of land for speculation, it is hardly possible for such control to be secured.

During 1924, 185,585 carats of diamonds, with a declared export value of $4,119,950, were entered at the Department of Lands and Mines.[1] From Jan. 1 to June 30 of the present year 81,060 carats[2] were exported, against 81,078 carats for the same period of 1924, which seems to indicate that the industry is holding its own. In 1924, the average number of stones per carat was 6.2 and the average declared export value was $22.20 per carat. The four largest stones found in 1924 ranged from 16 to 18⅛ carats. This is not as good as the preceding year, when six stones were found weighing more than 18 carats, the largest tipping the scales at 48½ carats.

The known diamond area covers over 4,000 square miles and is being continually extended by new discoveries. The diamonds are taken from alluvial workings in the gravels of the innumerable small streams. Only a small portion of the known area is actually staked.

Introducing the "Pork-Knocker"

A black man, locally known as a "pork-knocker," with practically no capital can work his way up to the diamond fields in a trader's boat, stake a claim, and work it. He sells his production to one of the many shops that have been established in the mining district, and, although food prices are high and diamond prices in the bush lower than in town, he makes a living. In many cases the traders control the claims near their shops and allow any "pork-knocker" to work on them, provided he trades at the store. The profit is naturally made by the traders and will be until the shallow workings are exhausted. In very few instances are pits dug over 10 ft. deep, and most of the output at present comes from the shallow gravels less than 6 ft. from the surface. Of the dozen or more of licensed diamond buyers residing in Georgetown, the majority are in one way or other interested in the trading companies.

The wide distribution of diamonds in the country is indicated by the following table, giving the production for 1924 by districts:

District	Carats
Mazaruni River	150,214
Potaro River	25,080
Puruni River	9,591
Cuyuni River	549
Berbice River	134
Barima River	17
Total	185,585

The entire output is won by the simplest hand methods. The overburden down to the gravel is spaded off; then the gravel is thrown into a tom, which removes the oversize and most of the clay. The concentrate from the tom is panned either in a batea or sieve to remove the very fine material, and the stones are picked from the residue dumped on to a sorting board. A skilled panner can so manipulate his sieve as to concentrate the precious stones near the center at the bottom. This causes the stones to show at once as soon as the contents of the pan are dumped upside down on the sorting board. Several rotary hand washers are in successful operation on the claims of Manuel Veira at Puzzle Creek, Kurupung. These are the only attempts so far toward the mechanical handling of the gravel.

At some future time, when the shallow deposits have been exhausted, small dredges will undoubtedly have to be employed, and the present individual effort will then give way to organized companies that can afford a rather heavy capital outlay for transporting large equipment.

River Traffic Heavy

Transportation to and from the Mazaruni field is much the same as when development first started ten years ago. Out-board motors have been introduced, which save the paddlers on the still stretches of the rivers, and, above the rapids, towing launches are provided by some of the traders. Some idea of the traffic can be obtained from the government registry of boats clearing for the Mazaruni fields. In 1924, 870 boats bound up-river cleared, carrying 16,380 men, and 856 boats down-river, carrying 18,969 men. The diversion of several thousand "pork-knockers" to the newly opened and much more accessible Potaro field, where a 24½-carat diamond has been found, probably accounts for this seeming reduction in up-river traffic.

The population of the Mazaruni area varies from 6,000 to 9,000 men, according to the season of the year, reaching a maximum in March and having the lowest figure when the men are "down-river" for the Christmas holidays. As none of the men take their families "up-country," they all make one trip and sometimes three or four trips to the coast villages a year, depending on their luck.

The establishment of a government station at Kamakusa, presided over by a warden-magistrate, who has wireless communication with Georgetown, has greatly facilitated the administration of local affairs. Only fifty-seven cases were brought before the magistrate during 1924. Since the entire police force consists of one officer and twenty men, who are supposed to cover a territory of several thousand square miles in canoe or on foot, and oversee a shifting population of upward of 10,000 men, this record speaks very well for the law-abiding "pork-knockers." However, a good deal of claim raiding has been reported. This generally means that a neighbor works a man's claims

[1]Figures from the Annual Report for 1924, just released by the Lands and Mines Department.
[2]Custom House figures, as the Lands and Mines Department publishes figures only in its annual reports.

while he is off getting supplies or taking a vacation in town after making a strike.

Accidents on the River

In 1924 only twenty-seven lives were lost by drowning, showing the remarkable skill and alertness of the licensed captains and bow-men who are required by the regulations to handle the boats through the rapids. A bad accident occurred late in January of this year, when the boat "Majestic," one of the fleet owned by Pires and Da Silva Brothers, struck a rock while shooting the Mora Falls on a down trip. Thirteen of the thirty-three on board were drowned. Another accident happened on April 4, when the "Clara D's" engine stopped while working up Popakai Rapid. The crew of twenty-two were all saved, but most of the cargo was lost and the boat badly stove in.

As might be expected, there is considerable rivalry between boats of the different trading companies as to speed on both the up- and down-river trips. In May the "Shining Star," of the M. S. de Freitas fleet, made the trip from Bartica to Red Hill, which usually takes sixteen days, in seven, thereby earning a bonus for Captain Reuben Welcome and her bow-man and engineer.

The economic survey of part of the Mazaruni field under the guidance of H. J. C. Connolly, government geologist, has made considerable progress since the first of the year, and will be continued under an annual appropriation from the Combined Court.

"Shouts," Little and Big

The following paragraph, taken from District Warden Roth's annual report, gives a good idea of how the scenes of activity shift from month to month. When a large stone is found, a little "shout" is started, and there is a stampede from near-by claims. When a particular locality or creek proves exceptionally rich, a great "shout" goes up, which may practically depopulate adjoining neighborhoods.

"In 1922 the center of activity was in the Kurupung area. In 1923 it moved across to the Eping and Perenong Rivers. All these areas lie between the southern bank of the Mazaruni and the Pakaraima Escarpment. Toward the end of that year there were signs of increased activity on the northern bank of the Mazaruni in the direction of the Puruni. The jumping-off places were Enachu and Buck Canister landings. About the middle of 1924, this latter area was estimated to be worked by almost half the total population of the fields. The shopkeepers and diamond buyers concentrated at Oranapai landing, some 18 miles above Kamakusa, where, toward the close of the year, some nine shops were doing a more or less brisk business. The lines of the Topographic and Economic Survey which was begun during the year are proving of great benefit to prospectors, and many new claims have been located on the heels of the surveyors. About mid-year there was a rush to the Issenero district, but, owing to the small size and poor quality of the gems found and to the great distance up-river of the new field the 'shout' soon died down and most of the shops removed to more accessible positions of the district."

A reader will naturally ask why young men from the United States could not gamble a limited amount of capital, have an interesting trip, and possibly find a fortune. A little analysis will show that it is not in the cards. There are from 10,000 to 15,000 natives working in the diamond fields. Suppose we take the lower figure. The total production last year amounted to $4,119,950. Allowing one-third of this amount for trader's expenses and profits, a figure which is again very conservative, it would seem that the gross earnings of each "pork-knocker" are only $275 per year. A white man cannot exist on that or compete with such cheap labor. The native is also more or less immune to malaria and is a carrier of most of the intestinal parasites in a chronic form.

The next question is naturally why not hire the native to work for you? The native will not work for less than a dollar a day and his food. It is hardly to be expected that he will work for you as hard as he will for himself when he expects to and may find a large stone in any shovel of gravel that would bring him ease and luxury for the rest of the year. Several of the trading companies are trying to work some of their own claims with paid labor, but the success of such ventures is still doubtful. However, the day will come when the shallow areas are worked out and machinery must be employed.

What It Costs to Stake a Claim

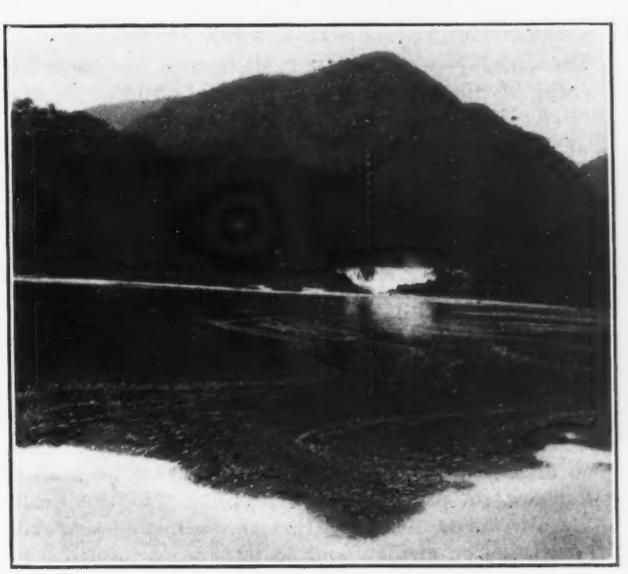
The following abstract of the Mining Regulations will give an idea of the fees to be paid in staking a claim:

"A royalty of 50c. (2s. 1d.) per carat is payable to the government on all declared diamonds, and prospectors' licenses are issued for $5 (£1 0s. 10d.) annually. A fee of $10 (£2 1s. 8d.) is payable on every application for a concession or lease, and $14 (£2 18s. 4d.) for every claim license issued. Individual claims may not be more than 1,500 ft. long by 800 ft. wide."

From the peak production in the year ended July, 1894, of 138,527 oz., the production of gold in 1924 dropped to 7,187 oz. It is interesting, however, to note that the total production of the colony since 1884 has amounted to $46,146,236. The production during the first half of 1925 also shows a decrease, as only 2,111 oz. was exported, against 2,856 oz. for the corresponding period last year.

Gold Less Attractive Than Diamonds

The recent decrease is largely explained by the diversion of the "pork-knocker" to the diamond fields at the expense of the alluvial gold workings that have been operated by hand. Three small dredges are still



Amatuk Falls on the Potaro River. Vertical drop about 30 feet

in operation, the New Guiana Gold Co.'s dredge in the Konawaruk, and the Minnehaha Development Co.'s two dredges in Minnehaha and Mahdia creeks. A drag-line scraper is being operated by a small syndicate on the Barima River near Betsy Hill.

There are numerous quartz veins in the gold area carrying paying values, but the expense of getting machinery into the region under the difficult conditions of transportation has proved too much for the companies that formerly made attempts to operate.

One Bauxite Operator

The only company operating in bauxite is the Demerara Bauxite Co., Ltd., a subsidiary of the Northern Aluminum Company of Canada, which holds about 3,000 acres of Crown and Colony lands under leases obtained in 1916 and about 20,000 acres of private property.

The company's deposits extend from above Akyma down to the head of ocean transportation at Christianburg, on the Demerara River. At Mackenzie, about 65 miles from the mouth of the river and at the head of ocean navigation, the drying plant and storage and loading docks have been built. The 1924 production of 154,324 tons exceeded that of 1923 by 53,978 tons and equaled almost half the production for the same period of the Arkansas mines, which are the largest producers in the United States. The increase in production is still going on, as 93,255 tons was exported during the first six months of this year, against 75,643 in the corresponding period of 1924.

As the freighters carrying bauxite are small, the movement of the present tonnage means the sailing of about six ships a month. The company pays a royalty of 10c. a ton on each ton of ore shipped from Crown lands and an export duty of 1½ per cent of the declared value, which averaged $5 for the six months ended June 30.

Most of the ore was cleared for New Orleans, from which point it is shipped to the oxide plant of the Aluminum Company of America at East St. Louis. The large portion of the oxide or refined alumina is reshipped to the Northern Aluminum Co.'s plant at Shawinigan Falls, Canada.

Medical and Hospital Work Important

The chief recent event at Mackenzie has been the opening of the company's new hospital building on May 23. A large party, including His Excellency Sir Graeme Thomson, the Governor of the Colony, and the principal government officials, were taken up the river on one of the company's boats for a two-day excursion as guests of the managing director, Ralph H. Carr.

The new hospital and staff quarters, costing $85,000, is equipped with forty-five beds, but room is provided for an expansion up to eighty patients. It is planned not only to take care of the company's 1,100 employees and their families, but also those of Sproston's Limited and such emergency cases as may be brought down from the Potaro diamond fields as well. The company, furthermore, considers it to its advantage to render medical assistance to the native population both above and below its property as a protection to the health of its own men. The fact that the company's expenditure in 1924 on medical and hospital work totaled more than $14,000, while sanitation and upkeep cost an additional $20,000, not only shows the importance of such work in tropical camps but gives an idea of the necessary outlay. In 1923, the entire force of the company were treated with carbon tetrachloride for hookworm (ankylostomiasis), and since then all newcomers are examined and treated, if necessary. The fight against malaria, the scourage of the tropics, is a continual one. As at Panama, preventive measures, such as drainage, oiling of pools, and cutting back the bush, have been considered of the greatest importance.

The government's policy regarding bauxite has been directly opposite to that which it has pursued in handling the diamond lands. All bauxite lands were withdrawn from entry during the war. Paragraph 136 of the 1924 report reads as follows:

"No regulations have yet been approved by the Secretary of State for the Colonies for the exploration or working of bauxite deposits and no new titles were issued during the year."

British to Draw on Bauxite Resources

The Colonial Office, appreciating the fact that bauxite could be worked profitably only by a company with a large capital, and also to conserve an adequate supply for British users of ore, has negotiated privately with several British companies, which have organized a syndicate known tentatively as the Combined British Aluminum Interests. These negotiations have reached a point since the first of January that justified the syndicate in sending out a party to examine the remaining deposits. Dr. R. S. McCann, geologist, accompanied by J. E. Bloare, chemist, arrived early in May to undertake the field work. It is understood that the syndicate will have the right to select from the 200 square miles of remaining territory known by the government to contain deposits of commercial value, such lands as it may desire.

To summarize the situation, it is evident that the production of gold is declining, diamonds for the present are being produced at the 1924 rate, and the exportation of bauxite is steadily increasing.

One Hour Ahead—or Behind

By D. E. A. Charlton

"I mus' say," says Cap'n Dick, "I do be glad this 'ere daylight savin' 'ave come to a h'end. Seemin' to me that tha confushion that comes from changin' from one 'our to tha h'other do drive a chap fair distracted, so that h'at times ee don't naw h'if ee's gawin' h'or commin', spechully h'at tha beginnin' an tha h'endin'.

"Jus' afor' they started with un, Billy Pollard wuz walkin' 'ome from tha bal with Tommy Richards one h'evenin', an' Tommy sez, 'Billy, w'ot's h'all this I 'ear baout this 'ere daylight savin'?' 'W'y, Tommy,' sez Billy, ''tis jus' like this. Thee puts that clock one 'our a'ead, an that puts tha time one 'our a'ead. So that w'en h'its 7 o'clock h'its 6 o'clock. No, 'old on, I didn't get that right. 'Ere's w'ot I mean: W'en thee puts tha clock one 'our a'ead, thee puts tha time back one 'our, so that w'en h'its 6 o'clock h'its 7 o'clock. Oh, dam-me, that's not right h'either. W'ot I mean is that you put tha clock back one 'our an that puts tha time back one 'our, an then h'its 7 o'clock w'en h'its 6 o'clock. No, that isn't un. W'ot I should 'ave said is that w'en you put tha clock back a 'our you put tha time a'ead one 'our, so that w'en h'its 6 o'clock h'its—oh, dam-me,' sez Billy, 'w'y don't they leave tha time alone, any'ow?' "

Mining Companies and the Capital-Stock Tax

Peculiar Character of This Impost—Explanation of the Apparent Inconsistency With Valuations as of March 1, 1913, Established for Depletion Allowance—An Annual Re-valuation Necessary for Determining Levy

The following article is contributed by a correspondent who has made a careful study of tax matters and is thoroughly conversant with the Federal Tax situation in which mining companies are involved. Mining Journal-Press does not attempt to pass upon the intricate legal questions involved, some of which presumably must be ultimately decided by the courts. The article is an argument presenting the mining companies' side of the case; it is published with the belief that it will be of benefit to the officials of such companies.—THE EDITOR.

CONCERNED and harassed as it is with the vital and overshadowing question of government revaluations, and concomitant matters of depletion rates, capital distributions, and the like, the mining industry naturally has given comparatively minor attention to another phase of taxation by which it is also subjected to what is apparently unfair and disproportionate taxation—namely, the capital-stock tax on corporations.

At the conference on mine taxation held in conjunction with the annual convention of the American Mining Congress at Sacramento, Calif., in September, 1924, but scant and passing reference was made to this section of the tax law, yet it is of considerable importance to the industry, and since the government will soon be making its assessments for the fiscal year 1925-1926, it seems not inappropriate at this time to give to it the careful consideration which, in point of view of equity and fairness, it deserves.

MISCONCEPTION OF COUZENS COMMITTEE

According to newspaper reports, Senator Couzens, of Michigan, has commented adversely upon the fact that some copper-mining companies have reported, for purpose of capital-stock tax, values differing from values as of March 1, 1913, established for purpose of depletion allowance, and has inferred that this substantiates his contention that the values established for depletion are too high.

If Mr. Couzens is correctly reported, it would seem that the Couzens committee has formed an erroneous conception of the nature of the capital-stock tax. The law and regulations clearly call for entirely different bases in the two cases, and since, as will be shown hereafter, the capital-stock tax section of the law seems clearly to call for *annual revaluations*, there is no inconsistency in such differences in valuations as of the same date.

Assuming Mr. Couzens to be correctly reported, one would expect to find that as a whole the mining industry had underpaid its fair share of capital-stock taxes, whereas official statistics apparently prove the contrary to be the case.

Turning to "Statistics of Income and Taxes for the Year 1922" (the latest year at present available), issued by the Statistical Division of the Income Tax Unit, and comparing two groups, the "Metal Mining Industries" and "Manufacturing Industries," we find in the government's compilation the following:

	Metal-Mining Industries	Manufacturing Industries
Taxable income (1922).....	$34,871,917.00	$3,301,856,533.00
Capital-stock taxes	1,557,200.00	27,508,449.00
Per cent of taxable income paid out for capital-stock tax....	4.6	8/10 of 1

Although admittedly the capital-stock tax is not a tax on income, nevertheless earning power is in the final analysis an essential factor in determining the "fair-value" basis for this tax, and the striking disparity disclosed in comparing the relation to taxable income of the capital-stock taxes paid respectively by mining companies and manufacturing companies warrants at least some consideration of the underlying causes therefor and has prompted this brief review.

WHAT IS THE NATURE OF THE CAPITAL-STOCK TAX?

Before proceeding to discuss the basis or bases that may properly, under the law, be used for the purpose of the imposition of this tax, it is pertinent first to determine the essential nature of the tax itself.

Taxation of this general character was initiated by the act of August 5, 1909, commonly called the Corporation Tax Law, which imposed a tax on every corporation, joint-stock company, or association organized for profit and having a capital stock represented by shares with respect to the carrying on or doing business by such corporation or company equivalent to 1 per cent on the entire net income over $5,000. This act, passed prior to enactment of the Sixteenth Amendment to the Federal Constitution, was attacked as unconstitutional. The Supreme Court, however, held that it was not an income tax but an excise tax and sustained its constitutionality. It was merely *measured* by income.

The capital-stock tax in its present form was first imposed by the act of 1916, being part of Title IV (Section 407) of that act, and described as "a special excise tax with respect to the carrying on or doing business by such corporation." It was then evidently regarded as a war tax. This seems in a measure confirmed by the provision that any corporation paying the munitions manufacturers' tax (a special war tax) shall be entitled to a credit against capital-stock tax equal to the amount so actually paid.

Article 7 of Regulation 38 governing the 1916 act says, in part:

"The tax is not upon the par value of the capital stock, but upon its *fair* average value for the preceding year." . . . "As regards domestic corporations it is on an entirely different basis from the excess profits tax, which is concerned with invested capital and not with the *present* fair value of the capital." (The italics are the author's.)

Article 4, Regulation 38, says in part:

"It (the tax) may be described as a tax upon the doing of business in the capacity of a corporation."

Article 17, Regulation 50, governing the 1918 act, contains the same wording.

The present capital-stock tax is imposed by Section 700 of Title VII of the Revenue Act of 1924, which

is but little changed from the corresponding sections of prior acts; that is:

Section 1,000 of Title X of the Revenue Act of 1921.
Section 1,000 of Title X of the Revenue Act of 1918.
Section 407 of Title IV of the Revenue Act of 1916.

It is clear, therefore, from the law and regulations that the tax itself is:

1. A special excise tax with respect to carrying on or doing business.
2. An annual tax.

It is further clear that it is based on "*fair average* value of its capital stock *for the preceding year.*" (The italics are by the author.)

With these definitions as to the nature and general basis of the tax established by the law itself, the principal element of uncertainty arises when we attempt to determine what constitutes "fair average value" for the purpose of the tax. It is significant that the 1916 act imposes this tax as a special tax on capital, surplus, and undivided profits "*used* in any of the activities or functions of their corporation's business."

Both the 1921 and 1924 acts add, "In estimating the value of capital stock the surplus and undivided profits shall be included"; that is, shall be included in the "estimating" of or arriving at the fair value, *but not necessarily in the fair value itself.* This is important and is borne out by Article 16, Regulation 64. Also, we find in Article 15, Regulation 64,

"For the purpose of capital stock tax the fair value of the capital stock is estimated and is predicated on *present values,*" and "In case of the capital stock tax the fair value looks to the *present* net value of the assets, irrespective of the amount of the investment of the stockholders." (Italics by the author.)

Present net value is certainly not necessarily March 1, 1913, value.

Authorities and Court Decisions

Although the courts have not prescribed with exactitude any formula for establishing the measure of "fair average value," they have already interpreted several important factors or elements relative thereto and to the general nature of the tax itself. A few citations are here made from the more important cases.

It is an excise tax. The 1916 act specifically describes this as an excise tax, and its status in this respect is undisputed. This is confirmed by Washington Water Power Co. vs. U. S. (56 Ct. Cls. 76) and numerous other cases. Judge Hough in the United States Circuit Court of Appeals in the case of Central Union Trust Co. vs. W. H. Edwards says, "Admittedly the statute created an excise or privilege tax, not one directly laid *on* property."

It is not a property tax. See Judge Grubb in Central Union Trust Co. of New York vs. Edwards (District Court for the Southern District of New York, May 25, 1922).

Fair value of capital stock. Judge Hough in case of Central Union Trust Co. vs. W. H. Edwards (United States Circuit Court of Appeals), after citing different interpretations of the meaning of "capital stock" by various states, says:

"The lack of fixity of meaning, the absence of any agreement in definition shown by the foregoing examples (which might be much extended) constrain to the belief that 'capital stock' is a term plastic to say the least, and compelling its interpreter to look to the context for a meaning that has not been reduced to any rigid formula."

He goes on to say:

"But when the statute speaks of 'estimating' capital stock, and of arriving at the 'fair average value' thereof for a year, the words are so inappropriate to the process of transcribing book values, that an inference is irresistible of some other process being within the legislative intent."

Besides drawing attention to the somewhat uncertain nature of the term "capital stock" and stating definitely that a measure of its "fair value" comprises other than book values, Judge Hough also, in the foregoing case, clearly indicates that, for the purpose of capital-stock tax, "such fair value is for a year"; that is, it is to be computed or revalued annually.

Circuit Judge Mack, in National Paper & Type Co. vs. W. H. Edwards, cites that the cases of Washington Water Power Co. vs. U. S. (56 Ct. Cl. 76) and Flint vs. Stone Tracy Co., (220 U. S. 107), also establish that:

"The tax in question is in form an *excise* tax on the privilege of doing business as a corporation measured by the *fair average* value of the capital stock of the corporation *for the preceding year.*" (Italics by the author).

Judge Anderson, in Malley vs. Howard (United States Circuit Court of Appeals), says further:

"The phrase in the statutes as to including surplus and undivided profits puts beyond doubt the question of the Congressional intent to measure this tax by *business and financial realities,* not by bookkeeping forms or mere names."

Justice Sanford, in delivering the opinion of the Supreme Court in Hecht vs. Malley and Crocker vs. Malley, says:

"We think that in the act of 1918 the average value of its 'capital stock' should be interpreted as equivalent to the capital invested in the business; that is, the net value of the property owned by the association *and used in its business.*" (The italics are the author's.)

And further he adds:

". . . and this construction is in harmony with the provisions as to the excise tax on a foreign corporation which is fixed upon the value of its capital actually invested in the transactions of its business in the United States."

Here the limitation of the valuation is (1) as to capital actually invested *in transactions of its business,* and (2) as to *place;* that is, the United States.

Since the capital-stock tax is a recurring tax, payable annually, does it not seem reasonable to assume that a corresponding limitation as to time, that is, as to capital *annually* used or employed, would be in conformity with both wording and intent of the act?

March 1, 1913, Valuation vs. Yearly Revaluation

Judge Grubb, in Central Union Trust vs. Edwards, points out that the act (1916) provides that in estimating the value of capital stock the amount of such annual tax "shall in all cases be computed on the basis of the fair average value of the capital stock for the *preceding year.*" (The italics are the author's.) The 1918 and 1921 acts also clearly refer to the "fair average value of its capital stock for the preceding year ending June 30."

Regulation 64, Article 15, says:

"The fair average value of the capital stock, the statutory measure of the tax, is not necessarily the book value or the value based on prices realized in current sales of shares of stock or the value determined by capitalization of earnings."

Further, this article states:

"The fair value of the capital stock, as provided under Section 700 (a) (1) of the Revenue Act of 1924, and invested capital are not necessarily the same.

"For the purpose of capital-stock tax, the fair value of the capital stock is estimated, and is predicated on *present values.*" (The italics are the author's.)

Yet we find on the back of the form for making the return, under "Special Instructions," the statement that "In the case of mines, oil and gas wells, other natural deposits and timber valuations established as the basis for depletion in computing income and profits taxes should be shown in the Fair Value column."

Valuation established for depletion is in the case of corporations existing prior to March 1, 1913, the value of their properties as of that date.

If the tax is to be computed *annually* upon *present* values (ignoring altogether the question of whether the tax is to be computed only upon such *portion* of present values as are used or employed in the transactions of the year), can it be contended that March 1, 1913, values and present values are for this purpose one and the same thing?

What Really Is "March 1, 1913, Valuation"?

As seems scarcely necessary to recite, the first day of March, 1913, is the date on which was made effective the Sixteenth Amendment to the Constitution of the United States, enabling the Congress to lay and collect taxes on incomes without apportionment among the states and without regard to any census. It became necessary, in view of this, clearly to distinguish between income earned or accrued (whether realized or not) before March 1, 1913, which it was illegal to tax and which was therefore in effect capital at that date, and income accruing after March 1, 1913, which of course was subject to tax. The importance of this was accentuated by the 1917 act, with its special provisions for excess profits taxes, invested capital, depletion, and so on, and under Treasury Department regulations there was determined and fixed for all time, in the case of mining companies especially, the values which had accrued to this basic date. It matters not, and is in fact entirely irrelevant to the point under consideration, whether these were the *actual* values ultimately realized (it might take fifty or in the case of some coal mines even one hundred years scientifically to determine from actual realization the true value at March 1, 1913), but for the purpose of income tax and profits tax they must be considered definite and final and legally *res adjudicata,* otherwise would be jeopardized the whole structure upon which is based our present complicated system of taxation. In a general way the method of arriving at this valuation may be thus outlined:

In the case of a mine, the content either actually measured or closely estimated was first determined (giving the total asset in kind), together with probable rate of extraction (determining probable operating life of the property). From careful consideration of average prices obtaining over a number of years, average costs, price trends, and other elements affecting value, factors of probable proceeds, cost and profit realizable in the future were arrived at. The present value of these estimated future profits was *exactly* determined by mathematical calculation under accepted and approved formulas and the resultant figure deemed the value which at March 1, 1913, had accrued to the owner, no part of which is subject to income tax.

Now, although such calculations may have been exact scientifically and actually in every respect, yet, since they were arrived at by an averaged evaluation process covering a total number of years of life, it is evident that taking any one subsequent year by itself each of the factors of cost, price, profit, etc., might be and of course would be entirely different from such average without necessarily affecting its correctness. But the point then naturally arises as to what under such circumstances should be "the fair average value *for the preceding year*" on which to base capital-stock tax. Does not the law itself indicate a yearly revaluation based on the known factors pertinent to the taxable year? Recent rulings by the department and decisions by the courts seem strongly to countenance such construction of the terms and intent of the law.

The copper-mining industry has been in an unsatisfactory condition for a number of years, and many copper-mining companies have reported severe losses. Is it fair to assume that for the purpose of this tax the value of their properties during these years of depression in the copper market is the same as in prosperous years? It is exactly such an assumption that adoption of March 1, 1913, values as "fair values" for the purpose of capital-stock tax would force, but it is contended that the direction contained on the form of return (Form 707) is without warrant in law or regulations.

Ray Consolidated Case

Although a first impression of the opinion delivered by the court in the case of the Ray Consolidated Copper Mining Co. might lead to an inference that the principle of employing March 1, 1913, valuation as a basis of valuation for capital-stock tax purposes is countenanced thereby, a careful study will show that this point was not definitely before the court and that reference thereto is incidental and not material to the main question there at issue. The decision merely establishes that as a measure of the tax the fair average value of net assets rather than the average fair market value of the shares is to be employed. The court did not undertake to prescribe a formula for establishing the "fair average value of net assets." It did point out that "fair" means "just" and that "average" indicates apportionment. It went further and said, "Some discretion, some leeway, must be granted, some room allowed, *so that the burden imposed would fall with measurable equality upon all corporations taxed,*" (the italics are the author's), and proceeded to quote Justice Brewer in Powers vs. Detroit G. H. & M. Ry. Co. (201 U. S. 543, 561), wherein is stated "so that the tax is estimated upon that property rather than fixed by mere process of multiplication or division." Not only was no rule laid down as to any precise method for arriving at "fair value," but the court took pains to point out the widely divergent and variant factors that must necessarily be involved in the consideration of what is the measure of the tax in each individual case, the *sine qua non* in all determinations, however, being that the basis shall be "fair" or "just."

Capital Used or Employed in the Business

In John F. Malley vs. A. L. Howard et al., U. S. Circuit Court of Appeals, Judge Anderson, in contrasting the 1909 act with the act 1918, cites the case of Flint vs. Stone Tracy Co. and says:

"It (the tax imposed by the 1909 act) was measured by income—not as *under the present law* on the capital *used*." (The italics are the author's.)

And again, in the same case, he says

"Congress intended that this tax (the capital-stock tax) should be measured by the average amount of capital *used* during the tax year." (The italics are the author's.)

The 1916 act as originally introduced contained no provision for an excise tax. The Senate amended the bill so as to impose on corporations in addition to the income tax provision of Section 10, Title 1, a special tax of 50c. for each $1,000 "of capital, surplus, and undivided profits *used* in any of the activities or functions of their business." (The italics are the author's.) The chairman of the Senate Committee on Finance, in reporting the bill with this amendment, referred to it as "imposing a *small* tax upon corporations in the nature of a license tax for doing business." The House, while not adopting the exact language of the amendment proposed by the Senate, inserted the provision for a special excise tax now contained in Section 407 of the act of 1916. The intention to tax only the capital employed or *used* is borne out by the provision in that section that any corporation not doing business—that is, not using its capital during the preceding taxable year—is not subject to the tax.

Although to some extent this feature of basing the tax on capital *used* or employed in the transactions of the year may have been ignored in more recent regulations, it seems evident that this was clearly in mind in the department itself in the earlier history of the tax, for we find this significant paragraph in a letter by the commissioner (T. D. 2417) dated Dec. 16, 1916:

"Any surplus or undivided profits of a corporation that is invested in bonds or other securities having no connection with the actual business of the corporation should be stated on the return and will be taken into consideration if the fair value of the stock is estimated under Case III of Item 6."

Since this tax is in the nature of a license for doing business, it certainly seems logical and reasonable that it should be based upon the value of the things used with which such business is done. And since, further, the tax is an annual tax, does it not follow that only the capital employed or used in the business for a year was meant to be the basis for taxation?

It is to be noted that holding companies, though having large assets, are exempt. It is further to be noted that foreign corporations are taxed only on the capital used or employed in the United States.

An Example of Gross Inequality

It is fairly evident that the reason that mining companies have paid out for capital-stock tax 4½ per cent or more of their total income, whereas manufacturing companies have been required to pay less than 1 per cent (as shown in the statistics for 1922 cited above), is that the department has imposed the tax in the case of mining companies on large reserves which by the very nature of the industry the mining companies are required to carry for long periods for future use, whereas manufacturing industries which carry only those supplies necessary for their current operations escape a corresponding burden. It has been held that the tax burden imposed should fall with measurable equality upon all corporations taxed. Here is a clear example of gross inequality, and it is contended that if Congress intended mining companies to be taxed disproportionately to other corporations the law should have so specifically stated, and in the absence of any such definite expression in the law itself, it seems contrary to the intention and wording of the act to calculate the tax on unused ore reserves held for future operations.

In the income tax section of the same law as that containing the capital-stock tax provision, Congress has recognized the special and peculiar features of the mining industry and met this with special provision for depletion, successive acts showing increasing realization of the need for and justice of such allowance. The 1913 act contained provision for deduction of only 5 per cent of the gross value at the mines, the 1916 and subsequent acts increased this to the full amount sustained, the 1918 and later acts adding still further to this discovery values made subsequent to March 1, 1913. Is it not also evident, or at least entirely reasonable to assume, that, by imposing a capital-stock tax on the amount of capital *used* during the year, Congress intended also to meet this situation by specifically excluding from the imposition of this annually recurring excise tax the large amounts invested in mining claims and undeveloped orebodies which by no stress of imagination or construction of the law can be considered as being employed in current business transactions?

In some respects mining companies are of a dual nature. They are holding companies in that they invest a large amount of money in orebodies, claims, etc., which they do not expect to operate or utilize until some later period, and they are operating companies to the extent to which they currently use such ore reserves. Would not a fair basis in the case of mining companies be to tax them on the value of the capital invested in plant and current assets, excluding ore reserves except to the extent of the value of the ores actually extracted during a year, and might not such basis be entirely in conformity with the law and regulations heretofore cited?

Conclusions

It seems clear from the law, the regulations, and court decisions that (1) "fair value" can only be an estimate; and (2) that such fair value must be "equitable" or "just."

It seems to be fairly well established through interpretations of the law by the courts that (3) the basis of valuation for the purpose of this tax is the actual *capital employed or used in transactions* of the business during the year; and (4) that any basis, to be "fair," should result in the tax burden being distributed with measurable equality to all industries.

The following inferences may therefore be drawn:

(a) That instructions to mining companies to return as "fair value" March 1, 1913 (or other basic date) values established for depletion purposes are without warrant in either law or regulations and that such basis is not fair, just, or equitable.

(b) That if capital used *during the year* is a correct basis, the inclusion of large ore reserves, mining claims, etc., held for use over future years is incorrect.

(c) That mining companies are taxed disproportionately to other industries.

Even within the mining industry itself corporations are taxed disproportionately as between themselves, depending upon the amount of unused capital invested for use in future periods.

It is conceivable that a tax may well be constitutional and yet at the same time not be fair. The question of constitutionality has not been raised in the present discussion, but it is clear that the bare quality of constitutionality is insufficient to meet the requirements laid down by the court in the Ray Consolidated case. The tax must be more than constitutional; it must be "fair" and "just," and the burden must fall with measurable equality upon *all corporations taxed.*

It is suggested that in connection with the pending revision of taxes, strong effort should be made to have this section repealed, it being an unfair tax and a now unnecessary war-time measure, the administration of which has placed an unjust and discriminatory burden upon business generally and upon the mining industry in particular.

Tin Mining in Malaya in 1924 Prosperous

A survey of mining in Malaya during 1924 indicates an unusual prosperity for the industry as a hole. Revenue from all sources increased, and operating companies report full activity during practically the entire year, according to *Commerce Reports.* The labor force employed in mining at the end of 1924 was 106,479, nearly all of whom were employed on tin and tungsten mining.

The constant and heavy demand for tin, the chief mineral product of this territory, was largely responsible for the year's favorable showing; and while the price of this metal fluctuated considerably at certain periods, the general trend was firm and the average was high enough to insure excellent profits for producers.

The proportion of the total output won from lode mining was 5.2 per cent for 1924, compared with 6 per cent in 1923 and 6.8 per cent in 1922. There was an increase of 22,109 piculs (142.7 lb.) over 1923 in the production by bucket dredges, although the percentage of the total output so won shows a slight decrease, the figure for 1924 being 21.8 per cent, representing 161,878 piculs.

The total exportation of refined tin from British Malaya during 1924 amounted to 80,674.44 long tons, of which the United States took 46,194.56 tons and Great Britain 16,334.57 tons. About 70 per cent of the shipments to England, however, are reshipped in London to American consumers, so that the United States takes eventually 80 per cent or more of Malaya's tin. Italy, Germany, and Japan were among the remaining countries to which refined tin was shipped during the year 1924.

Tin ore is imported into Malaya from nearby countries, chiefly Siam and the Netherlands East Indies, in comparatively heavy and increasing quantities. This importation is induced by the presence of two tin smelters in Penang, claimed to be the only strictly modern ones in this part of the world. It seems probable that with the further development of the tin fields of southern Siam tin ore will form one of the major imports from that country.

Alaska's Gold Output in 1924 Decreases

Mines in Alaska produced $17,457,333 worth of minerals in 1924, as against $20,330,643 worth in 1923, according to the U. S. Geological Survey. The total value of the mineral output of the territory since 1880 is $535,084,276. These figures are abstracted from the annual report on the mining industry of Alaska, now in preparation under the direction of Philip S. Smith, chief Alaskan geologist. The sources of Alaska's mineral output in 1923 and 1924 are given below:

Mineral Output of Alaska, 1923 and 1924

	1923		1924	
	Quantity	Value	Quantity	Value
Gold, oz.	289,539	$5,985,314	304,072	$6,285,724
Copper, lb.	85,920,645	12,630,335	74,074,207	9,703,721
Silver, oz.	814,649	668,012	669,641	448,659
Coal, short tons	119,826	755,469	99,663	559,980
Tin, metallic, short tons	1.90	1,623	7.00	7,028
Lead, short tons	410	57,400	631	100,899
Placer platinum metals, oz.	25.90	3,004	21.98	2,594
Miscellaneous mineral products, including petroleum, marble, gypsum, and lode platinum metals	.....	229,486	.....	348,723
Totals	.....	$20,330,643	.....	$17,457,338

In spite of the gradual exhaustion of the richer gold placer deposits, the gold output in 1924 was larger than in 1923. The increase was due mainly to activity in the lode mines in southeastern Alaska. The benefits to the gold-mining industry of interior Alaska that are certain to result from the completion of the Alaska Railroad are rather slow to appear in the production of gold, for the work of testing larger areas of placer ground and the engineering work needed to complete ditches and install dredges or other power-driven mining machinery require considerable time. The developments now in progress, and increased prospecting for metal-bearing ledges will eventually lead to an increase in production.

Arizona Mines and Smelters Represent 40 Per Cent of Assessed Value

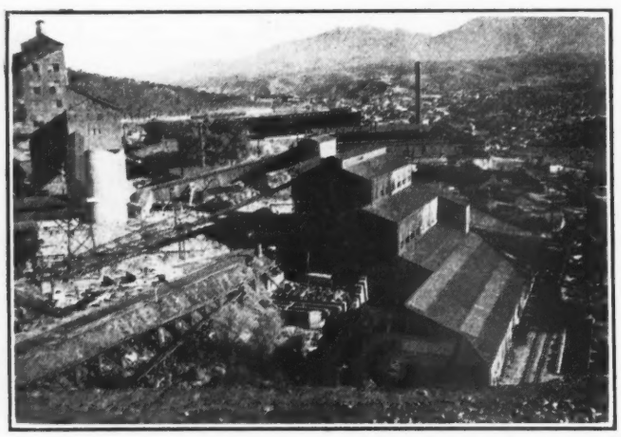
Productive mines and railroads make up nearly one-half of the total assessed property valuation in the State of Arizona, according to a statement issued recently by the State Tax Commission. Productive mines make up 30.29 per cent of the total, railroads 15.91 per cent, and lands of all kinds 11.86 per cent. The various classes of property and their valuations, according to the report, are as follows: Land, $75,980,625; improvements on lands, $9,630,860; city and town lots, $39,226,957; improvements on lots, $53,744,841; productive patented and unpatented mines, $194,008,013; non-productive mines, $8,534,185; smelters, concentrators and other mine property, $65,040,006; banks, $10,647,158; merchandise, $20,535,025; automobiles, $17,710,639; telephone and telegraph companies, $4,890,264; railroads, $101,937,386; water works, street railways, gas and electric plants, $9,473,999; livestock, $18,539,150; all other properties, $14,674,260. Total valuation of all the above was $658,388,071 after allowed exemptions had been deducted. The valuation of the Tucson Light and Power Co. was reduced from $1,396,485 to $1,060,730; New Cornelia Copper from $11,020,957 to $7,393,996. The valuation of Ray Consolidated Copper was reduced $1,199,155 and that of the International Smelter at Miami was reduced by $3,012,331.

Ore Concentration at the Old Dominion

Readjustment of Milling Practice Has Been Followed by Good Results—More Ambitious Plans Abandoned

By George J. Young
Associate Editor

A FEW YEARS AGO, when I visited the Old Dominion mine at Globe, Ariz., plans were being made for complete rehabilitation of the company's milling facilities. These plans were held in abeyance pending improvements in the general copper situation.



Old Dominion mill at Globe, Ariz. The town of Globe is in the background

In the meantime, flotation practice made certain important advances which caused the more ambitious plans to be abandoned, and in their place a readjustment of the milling practice was made, which appears to have accomplished all that had been planned.

The present ore-treatment facilities consist of a crushing and sampling plant and a concentrating mill. The flow sheet of the crushing plant is given in one of the illustrations herewith presented. The sampler is of the tower type. The old mill treatment plan included roll crushing, jigging, grinding in ball mills, tabling, and flotation. Flotation was used for the treatment of the slimes and fine sands, the bulk of the separation being effected by jigs and tables.

In December, 1923, the jigs were shut down and subsequently the tables also. The plan of treatment became what is familiarly known as "straight flotation." The resort to selective flotation involving the elimination of barren pyrite was adopted at that time.

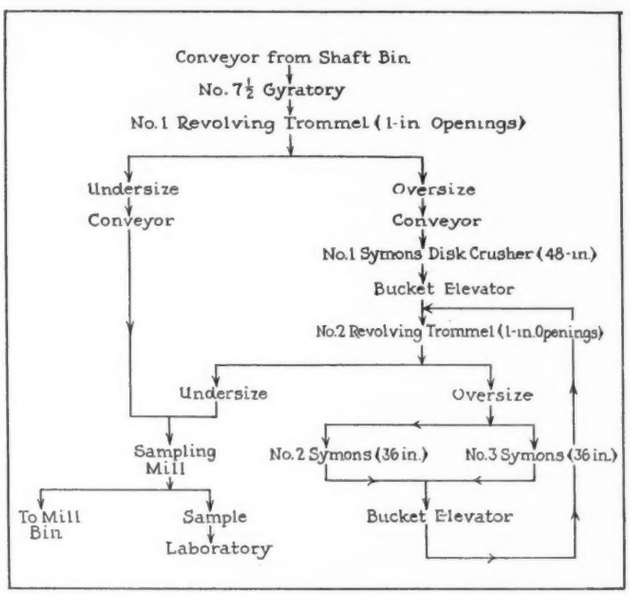
The ore is delivered to the mill bin at approximately ¾-in. size. It is fed over Hum-mer screens and the oversize sent to two 16 by 42-in. rolls discharging to a bucket elevator, by which the roll product is returned to the Hum-mer screens. The screen size is $\frac{5}{16}$ in. and the product ¼ in. The feed is received in two Dorr duplex classifiers (4½ by 18 ft.), which serve as dewaterers. The oversize product of the classifiers is divided between four Hardinge mills (reduced from 8-ft. diameter to 6 ft. by wooden lining and used as ball mills), which discharge to a single Dorr duplex classifier. The oversize product, or coarse sand, is sent to two regrinding mills each operating in closed circuit with a Dorr duplex classifier. Pine oil and a reconstructed oil consisting of blast-furnace tar oil and high-grade pine oil and sulphur is fed to the regrinding mills.

The overflow from the two classifiers following the screens is sent to a chip screen, and then mixed with the overflow from the other classifiers. Potassium xanthate is added and the combined overflow is pumped to the flotation distributer.

The pulp is pumped by one 6-in. Wilfley pump to a 14-way distributor, by which it is divided between seven Rork cells and one double-spitz K. & K. flotation cell. These produce a finished concentrate and a tailing, which is sent to eight 16-ft. Callow cells of the shallow type. A finished tailing and a rougher concentrate are made. The latter is treated upon three 8-ft. Callow cleaner cells, the middling being returned to the secondary flotation cells.

The finished concentrates are pumped to concrete settling bins, the overflow being sent to three thickening tanks, one of which is of the double-deck type. The underflow is dewatered on a 14 by 14-ft. Oliver filter and is discharged into cars for shipment. The settled concentrates are removed from the concrete settling tanks by a Blaisdell excavator and loaded directly into cars. The overflow from the thickeners passes to a settling pond, which is cleaned twice a year. No water is returned to the mill.

Lime is added to maintain alkalinity equal to 0.3 lb. of lime per ton of water. The lime consumption is 7 lb. per ton of ore. Lime is fed by a Challenge type of feeder to the feeder belt ahead of the screens. The mill water has a temperature of 100 deg. F. The capacity of the present plant is 1,300 tons per day. Mill heads assay about 4 per cent copper, ½ oz. silver, and 0.02 oz. of gold per ton. The tailing is 0.31 per cent copper. The concentrates average 18 per cent copper, 33 per cent iron, and 9 per cent insoluble, and are shipped to the International smelter at Miami, Ariz.



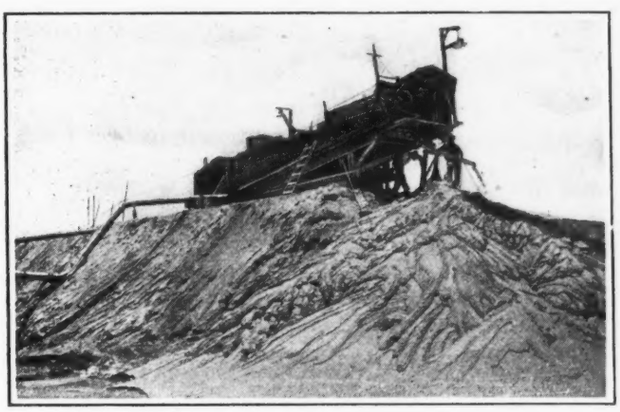
Flow sheet of the coarse-crushing plant

D. L. Forrester is mill superintendent and R. S. Allen, metallurgist. The mill work is under close supervision, and a number of interesting experiments are being tried out. Laboratory work and the use of the microscope for the examination of mill products are conspicuously employed. Acknowledgment of Mr. Allen's courtesy is hereby made.

Useful Operating Ideas

Tailings Disposal at Old Dominion Mill

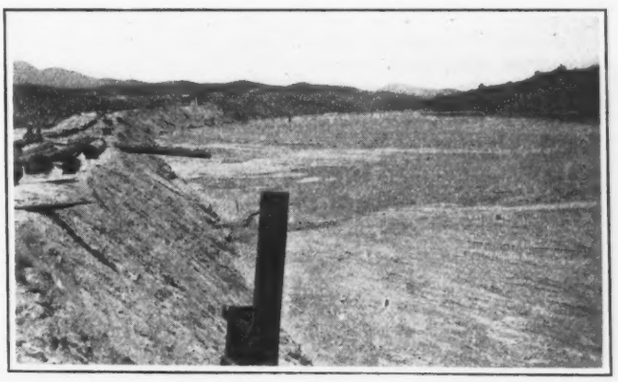
An ingenious method of tailings disposal has been devised at the plant of the Old Dominion Co., Globe, Ariz., and is in operation at the company's mill. The tailings from the flotation operations are run through an 8-in. flanged pipe a distance of 3,300 ft. The inlet at the mill is at an elevation of 3,558 ft. and the outlet of the pipe is at an elevation of 3,494, a difference of 64 ft. The pipe crosses a depression close to the mill which is 83 ft. below the mill inlet and then rises to the tailings dam, along which it extends practically on a level. The discharge end of the pipe is sufficiently elevated to feed a rake-type classifier which separates the sand and slime. The sand is deposited upon a bank which is extended to form a dam. The classifier overflow runs into the pond formed by the dam. A number of skimming outlets are placed in



Classifier sand discharge being used to extend tailings dam at Old Dominion mill, Globe, Ariz.

the pond, and the overflow is maintained at the desired level by cross boards. The clear overflow runs to waste.

The bank is constructed with a top width of 16 ft.; height 10 ft.; and 1-to-1 side slopes. The dam is 1,700 ft. long, and has been built up in separate stages. The classifier is shifted ahead on tracks as the bank is built up. In a period of nine months, the classifier was moved a distance of 1,680 ft. The bank is built out ahead 20 ft. before it becomes necessary to move the classifier and lengthen the tailings pipe. The pipe has been in use one year and is turned one-fourth of its circumference every six months. One man is ordinarily employed on the dam and tailings disposal. The quantity handled is 5,000 tons of water and pulp per day. About 1,000 tons of solids is discharged. The specific gravity of the solids is 2.9. The tailing is 12 per cent on 65 mesh and 50 to 55 per cent minus 200 mesh. The proportion of pyrite is from 20 to 25 per cent and the tailings contain 5½ per cent of hematite. The pyrite sometimes causes trouble. On several occasions the pipe has been plugged up. A high proportion of solids would make the scheme impracticable.



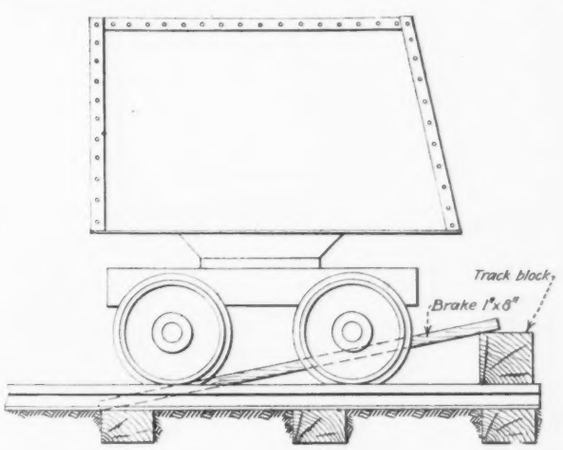
General view of tailings dam and pond

When it is necessary to shut down at the mill, the clear water used in flushing out the flotation machines sweeps most of the sand out of the pipe. A 1-in. pipe delivers a constant stream to the pipe during the shut-down interval. The fineness of the pulp is the important condition which makes practicable the use of long horizontal pipe runs.

Track Brake for Car Dump

By Charles Labbe

Adit tracks are laid with downward grades favoring the loaded cars, compensating in part for the weight of the load. Mine cars often attain greater velocity than desirable, and to prevent runaways and smashing into the track block some form of a brake is necessary. This can be arranged in a simple manner by placing a sound plank, 1 by 8 in. in section and 4 ft. long, between and parallel with the rails. The end of the plank is supported upon the track block, as shown in the accompanying illustration. The car axle engages with the board and diminishes the speed of the car.

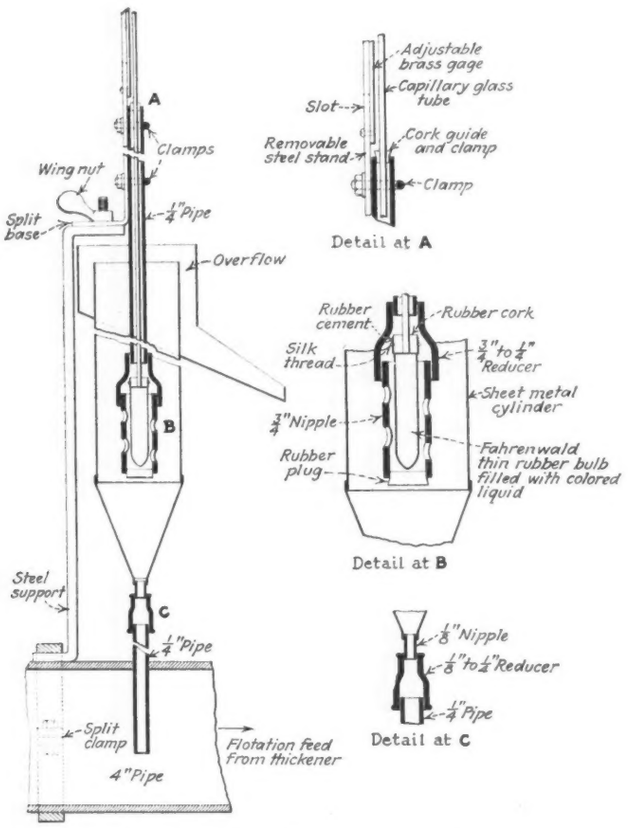


Track brake used to slow up mine cars at dumping points underground

Pulp-Density Indicator Useful in Flotation Work

By R. S. Handy
Mill Superintendent, Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho

An adaptation of Fahrenwald's density bulb has been found useful as a pulp-density indicator in flotation work. The accompanying illustration indicates the essential features. A thin rubber bulb is attached to a rubber cork which carries the glass indicator tube. Water colored with a dye fills part of the tube and all of the bulb. The tube is protected by an outer pipe which is attached to a perforated metal guard surrounding the bulb. The prolongation of the glass tube is in front of a graduated scale. The bulb is placed in a cylindrical metal vessel connecting with the pipe carrying the flotation feed from the thickener. Part of the pulp enters the vessel and overflows, thus giving a constant head in the metal vessel.

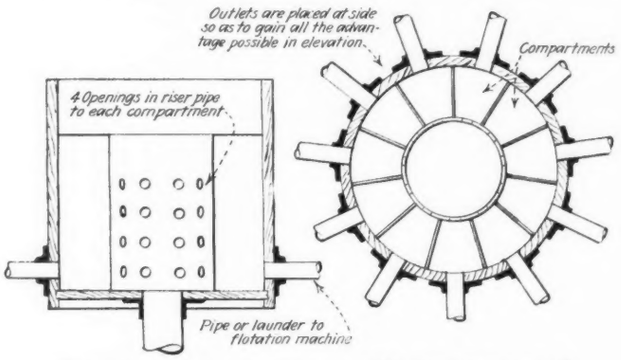


Fahrenwald's density bulb, as adapted for use as pulp density indicator in flotation work. It is extremely sensitive and measures dilution accurately

The apparatus was designed as a rough-and-ready indicator of the relative dilution of the flotation feed pulp, but it proved to be extremely sensitive, and dilution can be accurately measured. It is necessary for the supply pipe to extend down into the feed pipe so as to remove a pulp of average density. There is a definite segregation of the pulp in the pipe, the top being lighter than the bottom portion. The gage is made adjustable so as to make allowance for evaporation or loss of liquid in the tube. The apparatus is standardized occasionally by determining the density of actual weights of the pulp.

Pulp Distributor for Flotation Cells

At the Old Dominion Co. property, at Globe, Ariz., the pulp distributor shown in the accompanying illustration has been devised and placed in use at the Globe mill. The pulp rises through a central pipe, which is


Outlets are placed at side so as to gain all the advantage possible in elevation
Compartments
4 Openings in riser pipe to each compartment
Pipe or launder to flotation machine

Pulp distributor in use at Old Dominion mill

pierced with four holes in a vertical line opposite each compartment. Each compartment of the distributor connects with a pipe leading to a flotation machine. The distributor effects a splitting into equal parts and automatically takes care of any variation in the quantity of flow.

A Non-destructive Test for Wire Rope

A test which could be applied to steel hoisting rope to show whether it is in safe condition or not, and which would not require the cutting of a sample from the hope, would be of great value. Every industry and operation which depends on wire rope for hoisting and haulage purposes is anxious to learn of some method for determining the condition of ropes in service.

For some time the Bureau of Standards, of the Department of Commerce, has been investigating the possibility of applying some form of magnetic test to wire rope to determine its condition, as it is known that breaks in the individual wires, worn places, etc., as well as the stress on the ropes, affect its magnetic permeability The development of any practicable test is a difficult matter, because of the many variables which must be considered.

In order to design intelligently apparatus for the nondestructive testing of wire rope it is necessary to know the nature and magnitude of the effects involved. One of the causes of deterioration of rope is wear, and the Bureau has recently completed an investigation of the effect of wear on the magnetic properties and tensile strength of steel wire such as is used in the manufacture of wire rope.

The Bureau found that wear increases the magnetic permeability for low magnetizing force, and decreases it for higher values, in other words opposite readings are secured, depending on the magnetizing force employed. A load on the wire produces a similar effect, though it is much less in magnitude, and is probably caused by a redistribution of the internal stress in the wire. This change in magnetic properties is accompanied by an increase in the tensile strength.

The complete results of this investigation are given in Scientific Paper No. 510 of the Bureau of Standards, copies of which can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. at 5c. each.

Discussion

"Engineering and Mining Journal-Press" is not responsible for statements or opinions published under "Discussion." In many cases the views expressed are diametrically opposed to editorial policy and belief.

Depression in Australian Mining

Commonwealth's Fiscal Policy, Having Self-containment as Its Aim, the Ultimate Cause—Results in Increased Costs in All Industries

THE EDITOR:

Sir—Many allusions have been made in the mining press, including the *Mining Journal-Press*, to the existing depression in Australian mining and to the fact that only rich ore is being worked, this being the only ore that will pay. The high costs of labor are given generally as the main reason. I am unaware of any attempts to explain the root causes.

Those causes should be of general interest. It should be for Australia's good that they be generally known, both at home and abroad. Such is probably the first step necessary to the removal of those causes. It may be that in America, herself having been only a century ago, in age and population, about where Australia is now, this country's problems will be of more than usual interest.

The following comments may at times go beyond the immediate subject, and border on analysis of crowd psychology. I trust that they will nevertheless be not unwelcome.

The main ultimate cause of the depression in Australian mining is the country's fiscal policy. It has, temporarily at least, made self-containment its aim. This end is being sought by means of prohibitive tariffs on imports. Under modern industrial conditions, it is obvious that a policy of self-containment, for a population of less than six millions, is a policy of impoverishment—that is, of high production costs—especially when the conditions are eminently unfavorable to the production of some commodities. The great majority of manufactured goods requires mass production on a large scale to be produced at costs competitive with world's prices. With so small a market, large-scale production is impracticable.

But the process does not end there. Manufacturers are confined almost entirely to two centers, Melbourne and Sydney. In any one line of goods there is only a handful of manufacturers, in some instances only one. The result is "gentlemen's understandings" and no competition. The price of the product is always just under that of the imported article. If imports still seriously compete with local factories, petitions are made for increased "protection." Under such conditions, stimulus to efficient production disappears. It pays better to lobby for higher import duties than to concentrate on efficiency.

The result is increased costs in all branches of industry—increased costs of materials and of living, and therefore of labor. Mining, being the primary (and exporting) industry that employs the greatest proportion of materials and labor to its turnover, is affected most. Wheat, butter, meat, fruit, and other producers for export, whose products bring to them the world's prices minus freights and like charges, are also seriously affected, and on the whole those industries are stationary. Ample area and other special advantages are enabling them to hold on, but the majority of the producers are hard pressed. Australian wool-growing is relatively in a class by itself and has so far remained highly profitable. Its product is high-priced, and its employment of materials and labor is slight.

The American may observe that his country is also one of high protection, yet its mines treat low-grade ore, have enormous outputs and export greatly, also its agricultural production is huge. Internal competition, the immense home market, the possession of great capital, and other factors have led to totally different conditions from those in Australia. Manufacturing for a population of more than a hundred millions plus part of the outside world is an entirely different matter from manufacturing for six millions.

Naturally the primary producers are opposed to this extreme form of production, and their opposition is growing. They are, however, heavily outvoted by the city interests, supported by labor (which is solidly for protection of an even more extreme form than the present and which on the average carries half the voting power of the country).

The typical Australian would repudiate this statement of fact, saying that he wants his exports to be as large as possible, that he is seeking export markets and even sends out trade commissioners for that purpose. Strangely, this is true. He wants this thing, while making it impossible. He wants it not knowing what it means. He does not perceive that if he does not import, he can receive payment for his exports only by foreign investment of proceeds (in his case the best foreign investment being the redemption of his foreign borrowings).

Far from wanting payment in this form, he is still borrowing further abroad, ignorant of the fact that this borrowing is meaningless except that it enables him to secure imports without paying for them (by exports) at the moment—that is, that he is really borrowing goods (for import)—just as his existing foreign debts represent past unpaid-for imports.

He is taught by an ignorant or venal press, largely subsidized by the manufacturers either directly or by means of advertisements, that imports are accursed things which rob the workingman of employment and the employer of profits. The effect on the exporting industries, and therefore on exports, is not told him. So he penalizes and blocks imports and at the same time seeks additional fields for export and, to make the situation more paradoxical, indulges in foreign borrowing. A deeper analysis of the psychological causes of this misconception is interesting, but I feel that it would probably not be suitable here. With the same paradoxical inconsistency the Australian is pulling down the primary industries and yet wants only immigrants who will work in these—that is, work in the country, not

in the cities. Immigrants for the cities are unpopular and regarded as the takers of easy bread from Australian mouths. Yet the place from which they would draw immigrants is essentially a land of city dwellers and of factory workers.

This attitude is, of course, quite intelligible from the individual Australian worker's viewpoint. He wants the easy jobs and gregarious life of the cities (and his whole policy is to make the city jobs easy and well paid) and to avoid the more arduous and isolated work of the country. But it has not yet been explained how the newcomers will, under such circumstances, be restrained from going to the cities. Further inconsistency exists with regard to land settlement. The press and the politicians continually declaim that this must be effected, that the drift to the cities is harmful and tending to degenerate the national life. Yet the fiscal policy that is causing the injury is advocated by the one and given effect by the others.

The above is not the only reason for the attitude of the workers to the fiscal policy. Ignorance of economics plays a big part. Such slogans as "Keep the money in Australia," "Keep our home markets for our own people" are swallowed, without analysis of their results. The idea that a purchase abroad means losing the amount of the purchase to the country is preached and largely accepted. To this must be added the idea, which is undoubtedly in the minds of many laborites or their leaders—namely, that while Australia trades freely with the world, she is largely tied to the world's average industrial and social conditions, whereas if she were practically self-contained, she would be comparatively free to develop her own conditions. These they believe they could mold to the greater benefit of the worker—that is, they believe that they could achieve a more even distribution of wealth and work through government and industrial action.

Other factors also affect the issue. The country has not the capital to organize and equip its mines on a scale similar to that in America; and nearly all its available capital is now going into manufacturing. The extreme thinness of population over most of the country causes high transportation costs and added labor costs in most of the mineral fields. The insignificant home market for metals also constitutes a disadvantage compared with many American metal producers.

That the Australian miner has been affected by the above factors is certain. He is not the worker that he was, nor the worker that he would be had the atmosphere outlined not been created. The war has resulted in the industry losing much of its best labor, through deaths, disablements and disinclination to return to arduous work when easier city employment can be found or hoped for. But the greatest causal factor is the atmosphere described. To do him justice, however, it must be said that, judging from what one reads and hears, a similar decrease in labor efficiency has occurred in many other parts of the world. I incline to the belief that undue weight has been placed on decline of labor efficiency in Australian mining; for such matters are relative and comparisons must be made not with what labor was or could be but with labor in the mines of other countries. However, my experience is of Western Australia only. I have no direct experience of labor conditions in Queensland and New South Wales.

Whether the described conditions have come to stay, whether they will get worse, or whether they will be removed when people realize the results, is unforeseen and is a speculation that forms no part of the present theme.

That existing conditions press harshly on mining has recently been recognized by the federal government and it has exempted gold mining from all income or profit taxes. The State of Western Australia has recently exempted returns from all mining until capital outlay is redeemed. The federal taxation also recognizes this principle in a very incomplete manner. But these latter reliefs are only what is logically due to mining on the general circumstances surrounding it—namely, that a mine is a wasting asset, that the outlay on development and equipment is represented by assets that are unsalable or generally salable only at a fraction of their cost. Reasons for concessions to gold mines and not to other metal mines are hard to discover, except perhaps that the former are thought more often to serve as pioneers in a new country. Iron mining is subsidized by means of heavy tariffs on iron and steel, a fact that incidentally further increases the production costs of other metals.

H. R. SLEEMAN.

Perth, Western Australia.

Veindikes of the Engineer Mine

THE EDITOR:

Sir—Dr. Weed's interesting article entitled "Veindikes of the Engineer Mine, Near Atlin, B. C.," in your issue of June 27 raises certain matters for discussion and, in my opinion, seems to call for a note of warning in connection with others. This is necessary because he tacitly assumes certain occurrences and changes referred to in the article as being due to recognized processes. As a matter of fact, these have no basis in experiment at present, and unless this is understood the statements referred to may lead to misunderstanding and be repeated in the literature.

With regard to the "earliest fissuring and mineralization," the article states that this formed " . . . a multitude of very small veinlets of chlorite. . . ." Such an occurrence of hypogene chlorite is interesting and comparable to a certain extent with the "peach" of Cornish tin veins. It is suggestive, however, of hydrothermal rather than the magmatic conditions Dr. Weed implies.

It is also stated that ". . . slivers of the older chloritic vein filling became detached and floated in vein quartz calcite and albite. . . . The calcite had probably been absorbed by the vein magma as it came through the deeply underlying carboniferous limestone." It would be interesting to know what evidence there is that floating rather than replacement was involved and what was the condition of the vein "magma." Had the vein quartz calcite and albite already crystallized out at the time of injection? If so, what was the medium that carried these minerals and what were the means by which the material was maintained sufficiently fluid to "float" the older chloritic filling? In addition, how was the calcite absorbed by the vein magma? Was it by solution? If so, what was the solvent? What the nature of the resulting solution?

The "Shelly conchoidal masses . . . of native arsenic and antimony . . ." referred to in the article are strongly suggestive of colloform structure and colloidal origin.

The fracturing and alteration of the solidified quartz-feldspar-calcite "magma" can be explained on the assumption that the "magma" was, at one stage, a gel which by syneresis and dehydration shrank, cracked, and thus provided channels for the "new solutions" which deposited gelatinous silica, stibnite, and arsenopyrite. Such an explanation, however, assumes that a composite gel of several substances can be formed and, though this appears probable from geological evidence, at present there is no experimental evidence (known to me) of a stable colloidal solution containing more than one dispersed substance (phase) or of a gel of the same nature.

It would be interesting to know why Dr. Weed considers the silica to have been gelatinous. Does it retain evidence of such an origin? The article also describes the conversion of ". . . the former carbonate into colloidal silica soon changed to quartz or the quartz-roscoelite mosaic which now carries the gold." In this "colloidal silica" the same as the gelatinous silica previously referred to? Although colloidal silica may crystallize to quartz (elsewhere I have tried to show the probability that it does so), Dr. Weed's assumption that it actually does so is not justified by the present state ef our knowledge on the subject.

The general method of ore deposition implied by Dr. Weed when he writes ". . . The deposition of the gold and its associated minerals took place in sub-stage or late phase of the third period of mineralization, when the hardening of the siliceous 'gel' and its conversion into quartz caused the formation of tiny shrinkage cracks, strain fissures, in the veindike jelly," has been described in detail elsewhere[1] and need be no more than referred to here.

Is it not probable that the gold entered with a certain stage of silica, likewise in colloidal solution and *protected* by the silica?

Bastin[2] has shown experimentally that the presence of silica prevents the precipitation of (that is, protects) gold under certain conditions. The "curly gold threads" as well as the "spherulitic groups" shown in Dr. Weed's figures have the distinctly colloform character suggestive of colloidal origin.

The same writer states that ". . . where the veins are not covered by glacial clay or débris, oxidation has attacked the sulphides and also the chlorite and roscoelite and the vein is somewhat rusty, porous and mostly leached of its gold." It would be interesting to know the solvent to which Dr. Weed attributes the leaching of the gold. From his description of the mineralization no manganese minerals would seem to be present and hence chlorine can hardly be assumed as the active solvent.

It has been suggested elsewhere[3] that from considerations in connection with a general method of preparing some colloidal solutions, gold can go into colloidal solution by attrition with no other solvent present than the universal one, water.

In rejecting the conclusion that the Engineer veins belong to the shallow zone type of deposits, Dr. Weed tacitly raises the interesting point (which is discussed at length in the reference already given, pp. 55-59, 77) as to whether the colloidal origin of much of the silica can be assumed as a common feature of deposits of the intermediate and deeper zones, as he would seem to imply.

Microscopic evidence shows that colloidal silica which has been transformed into metacolloidal opal and chalcedony is typically characteristic of the shallow zone.

The matter depends on whether coarse-grained quartz can develop by crystallization, directly or indirectly, from silica gel, and this, as pointed out previously, is still in doubt.

H. C. BOYDELL.

Cambridge, Mass.

[1] H. C. Boydell, "The Role of Colloidal Solutions in the Formation of Mineral Deposits." *Bulletin*, Institution of Mining and Metallurgy (London), December, 1924, pp. 15, 18, 53, 85-86, 104.
[2] E. S. Bastin, Washington Academy of Science, Feb. 4, 1915.
[3] H. C. Boydell, *op.cit.*, pp. 10, 61-63.

Where High-Grade Zinc Is Made

THE EDITOR:

Sir—In a previous number of the *Mining Journal-Press* you gave the addresses of manufacturers of high-grade spelter in Europe. Please note that one of the foremost plants for the manufacture of high-grade spelter, and one which you did not mention, is the Zinkraffinerie Oberspree, at Berlin, Oberschonenveide. Furthermore, in your issue of Aug. 29, you gave the addresses and names of companies interested in zinc ores. We beg to remind you that our company, the International Ore & Smelting Co., Saltillo, Coahuila, Mexico, has been operating for many years in the Mexican and particularly in the American fields in buying zinc ore and exporting it to Europe. The interests of our company are in the hands of the well-known Cie. Royal Asturienne des Mines, Avenue Gabriel No. 42, Paris, France.

THE INTERNATIONAL ORE & SMELTING CO.

Saltillo, Coahuila, Mexico.

World's Tallest Concrete Stack

THE EDITOR:

Sir—In your issue of Aug. 1 I was interested to note the photographs showing the 400-ft. column or shaft of a chimney being constructed for the Consolidated Mining & Smelting Co. of Canada, at Trail, B. C., by the Rust Engineering Co., of Pittsburgh, Pa. I have the pleasure of being the Pacific Coast representative of the Rust Engineering Co. The enthusiasm of your head-line or caption writer led him to designate this construction as being the "World's" tallest reinforced-concrete stack. The chimney could have been designated, with absolute correctness, as "America's" tallest reinforced-concrete stack (or chimney), for such it undoubtedly is.

I fear that criticism may be directed to you for presuming upon the credulity or knowledge of engineers experienced in power-plant or chimney design and construction. It is well known among the smelters and power plant engineers that there is a reinforced-concrete chimney or stack whose column is 550 ft. high in the service of the Kuhara Mining Co., at Saganoseki, Japan. The last-mentioned company also has a reinforced-concrete chimney of approximately 510 ft. height at its Hitachi mine, which is situated in the province of Hitachi, Japan.

It would appear to me appropriate that a correction be made, in order that the reader may understand that the statements to which I have referred were unintentionally made.

C. F. WIELAND.

San Francisco, Cal.

Consultation

Uses of Clays

"Can you inform me how to determine the suitability of a deposit of feldspar clay for various uses: whether it is suitable for manufacturing fine chinaware, brick, pottery, or other product."

The behavior of a clay, and therefore its value and suitability for any specific use, depends upon both its chemical and its physical properties. Its chemical properties depend upon the nature and the amount of impurities present and its physical properties depend upon both chemical composition and upon other factors not well understood and not easily measurable.

Authorities state that all the constituents of clay influence its behavior in one way or another, their effect being often noticeable when only small amounts are present. Therefore, the chemical composition is of great importance, but, as noted before, the chemical analysis alone is no adequate guide to the behavior of a clay. Two clays of the same appearance and chemical composition often behave entirely differently when molded and fired.

The following notes may assist in giving some idea of the best use to which your product may be put. They are from Bulletin 624 of the U. S. Geological Survey.

Whiteware Clays

Kaolin or China Clay (Non-plastic)—Kaolins are residual white-burning clays, consisting chiefly of the hydrous aluminum silicates and generally possessing little or no plasticity. Whiteware clays are used for porcelain, china, whiteware, pottery, high-grade tile, and paper manufacture.

Kaolin or China Clay (Plastic)—A sedimentary, generally white clay containing a high percentage of kaolinite and little or no iron oxide. Its principal uses are in the manufacture of paper, sanitary ware, and tile. The plastic kaolins are sometimes referred to as china and ball clays and contain more fluxing impurities than the non-plastic kaolins. They are also often called paper clays.

Ball Clays—White-burning plastic clays of high tensile strength and bonding power and little or no iron oxide. They are extensively used as an ingredient of high-grade tile and whiteware mixtures to give the body sufficient plasticity and bonding power.

Paper Clay—A highly plastic white-clay, free from sand.

Refractory Clays

Fireclays—Refractory or fireclays are clays which endure high temperature without change other than dehydration, but the term is frequently misapplied. Many of the best fireclays are non-plastic, this property being supplied by the addition of a small quantity of less refractory but plastic material. Comparative freedom from fluxes, such as iron, alkaline earths, alkalies, and excessive silica, is essential. The composition, both chemical and mineralogic, is similar to that of ball clay. The principal uses of refractory clays are for materials required in the industries (especially in iron and steel manufacture and in coke making) where high temperatures must be withstood.

Pottery Clays

The general term pottery clays includes some refractory and vitrifying clays. These clays are, as a rule, semirefractory, and burn to a dense mass. High plasticity, tensile strength, and complete retention of form while burning are essential properties. A buff color may be produced, owing to the content of iron or manganese. In ordinary practice a mixture of clays is used. Some of the products are earthen and common stoneware (both plain and decorated), crockery, and glazed ware.

Vitrifying clays are similar to pottery clays, but are composed of lower-grade material. They may be semirefractory, should burn dense, and should contain considerable iron, both for color and flux. Fair tensile strength is desirable, as is also low fire shrinkage and low vitrification temperature, with a good range in temperature between incipient and complete fusion.

Terra-cotta Clays and Shales—For terra-cotta ware a semirefractory clay of good grade is preferred. When burnt, low shrinkage and freedom from soluable salts and warping are essential.

Pipe Clays—Almost any fine-grained clay that has a well-developed plasticity and a high percentage of iron, which apparently favors the formation of the necessary glaze, is suitable for pipe clay.

Roofing tile and fireproofing requires semirefractory clay or shale, with fair plasticity and tensile strength, which burns hard at a low temperature. Other uses are for enameled brick, hollow tile and conduits.

Paving Brick—Material for paving brick includes many impure shales as well as semirefractory clays. It should possess fair plasticity and good tensile strength.

Brick Clays

Almost any kind of clay which possesses plasticity can be used for common brick. Red-burning clays are preferable, as they harden at a low temperature. Loess, glacial, and marine clays are also used for this purpose. Brick and drain tile are the principal products.

Pressed Brick—A fairly good quality of clay or shale is required for pressed brick. The shrinkage in air and fire must be low and the temperature of vitrification moderately low. For light-colored brick a semirefractory clay is used.

Adobe Clays—Adobe clays are surface clays which are high in lime, and hence can be used for but few products, the chief of which is adobe or sun-dried brick.

The ceramic station of the U. S. Bureau of Mines at Columbus, Ohio, is equipped for testing clays; and will give advice of a general character on your problem.

Market for Antimonial Lead

"Will you please advise me on the present market price of antimonial or hard lead, and also in what publications this price is quoted currently."

So far as we know, no periodical makes an effort to quote antimonial lead, for the reason that the price obtainable depends much upon the exact composition of the alloy, both with respect to the amount of antimony in it and the undesirable constituents such as arsenic. At the present time most producers are probably getting a premium, on account of the unsettled condition of the antimony market. On the other hand, there is frequently a surplus of antimonial or hard lead, and as a consequence producers must sell it at a discount from the price of ordinary lead. In short, the sale of the metal is a matter of specific negotiations as between buyer and seller, and any attempt to quote it would be abortive.

Treating Amalgamation Plant Scrap

"I am faced with the problem of realizing from an accumulation of many tons of iron chips, 'magnetings,' and scrap derived from amalgamating pans, launders, and various similar sources, such as are common to most mills using copper-plate amalgamation and fine grinding of concentrate in pans and similar machines.

"A certain amount of quicksilver and amalgam is entangled in the mass of material, which, for various reasons, cannot be disposed of outside the works.

"If there is a cheap and simple method of recovering the value from this heap, I should be exceedingly pleased to have a brief outline of it.

"No use has been made of the iron scrap, excepting that of a few pounds from time to time for matte reducing in the smelting room, and some other method of disposal must be sought."

The *Mining Journal-Press* would like to hear from anyone who can suggest some practicable method of treating this material.—EDITOR.

News of the Week

The Mining News of ENGINEERING AND MINING JOURNAL-PRESS is obtained exclusively from its own staff and correspondents, both in the United States and in foreign fields. If, under exceptional conditions, material emanating from other sources is published, due acknowledgment and credit will be accorded.

Summary

THE Bureau of Internal Revenue decides that general revaluation of silver mines will not be made—65c. price to remain as basis. Errors will be corrected in individual cases.

Rico, Colo., formerly a prosperous camp, is the center of renewed activity due to modern metallurgy and good metal prices.

Aluminum Company of America files answer with Federal Trade Commission denying violation of Clayton Act.

Arizona smoke damage cases closed—Small awards to Verde Valley farmers.

Good Springs, Nev., a producer of vanadium-lead-zinc ore.

Alaska Agricultural College and School of Mines at Fairbanks financed jointly by territorial and Federal Government.

Three new copper-gold deposits discovered in northern Quebec—Teck-Hughes cuts extension of vein at 1,480 ft.

Gold Hunter Mines, Inc., developing Atlas property, recently acquired—Crosscut to be 6,000 ft. long.

Geological report issued on Beardmore area, Port Arthur district, Ontario, by Burrows.

Tonopah Western preparing for active development work and early production.

Recent development work reveals lead ore in old Derbyshire mine, England.

Keeley Silver Mines Maintains Production

Mining Corporation and La Rose Continue Development—Other Activities

The August production of the Keeley Silver Mines, Ltd., of South Lorrain, Ontario, was 125,242 oz. of silver and 15,168 lb. of cobalt; three shoots of low-grade ore were developed during the period, the most important being in No. 16 vein at the tenth level, where an average of 120 oz. over 8 in. was proven, for a length of 30 ft.

The Mining Corporation continues to meet with good results at its South Lorrain property, and it is understood that on the most recent discovery ore has been found so rich in silver that it is necessary to cut it with a chisel. On the new sublevel of the Watson vein, a length of 65 ft. of high-grade ore has been proven over the face showing 8 in. of 6,000 oz. material.

The winze at the Violet property of the La Rose mines, at Cobalt, has been continued to below 930 ft., at which depth a new level has been established. This gives a total depth of the oreshoot of 130 ft., but so far the length established has not been more than 65 ft.

The buildings of the Keora mine, in Gowganda, were recently destroyed by fire, at an estimated loss of $67,000. It is expected that this will not entail the suspension of work for more than thirty days.

The Huronian Belt Co. has stopped work on the Peacock-Secord claims, which had been under option, but the company has a number of men at work on its claims south of Pelletier Lake.

In the Kirkland Lake area, the Tough-Oakes-Burnside is showing the result of higher-grade ore recently encountered underground, and profits are now running at from $5,000 to $10,000 a month, compared with a deficit in the previous months.

Several new gold discoveries have been reported recently, but as yet information is not available as to their importance. Rich gold ore is reported from Tashota, on the Canadian National Railway west of Cochrane. Another rich discovery is reported in the vicinity of Red Dog Lake near the Manitoba boundary. This is in the district of Patricia, a considerable distance from the railway.

Smoke Damage Cases Against Jerome Copper Companies Closed

THE smoke cases growing out of a number of complaints filed by ranchers in the Verde Valley against the United Verde Copper Co. and the United Verde Extension Mining Co. came to an end recently when a jury in the Federal Court in Prescott, Ariz., brought in a verdict for the Verde Valley farmers in the amount of $4,997.55. Six of the seven plaintiffs received awards varying from $160 to $3,000, and one, who claimed damage to a vineyard of $2,400, received nothing. The farmers originally sued the mining companies for $62,000 damages—$31,000 from each company. Federal Judge George M. Bourquin, of Butte, Mont., presided at the trial.

Rico, Colo., Zinc-Lead Mines Resuming Activity

Once a Camp of 7,000; Practically Abandoned; Revived by Improved Metallurgy

By Gail Martin

Rico, Colo., is another camp to profit by the higher prices for lead and zinc and by improved metallurgy which has raised the ban on zinc-lead ores. It has produced over 73,000 oz. of gold and 9,000,000 oz. of silver, and in the boom days between 1887 and 1895, is said to have had a population of 7,000. The demonetization of silver and the exhaustion of the rich deposits of oxidized silver, however, caused activity at Rico to record a steady decrease from 1895 until a year ago, when the population of the town had dwindled to 200 people and the number of active mines to only one or two. Today there is not a vacant building in the town. Even old sheds have been repaired and are being used for houses. For each property that was active a year ago, a dozen or more are being developed.

The most important recent event in the camp is the entrance of the International Smelting Co., a subsidiary of the Anadonda Copper Mining Co., into development of the district's mineral resources. This organization has acquired a contract for the entire production of the Falcon Lead Co., and taken a bond and lease on the properties held under option by R. L. Pellet, including the Potter, the Newman Hill, the Atlantic Cable, the Fairmount, and the Shamrock.

Another development of great significance has been the acquisition of

numerous groups of claims by the Rico Mining & Reduction Co. financed by Denver capital under the direction of Sewell Thomas. This company has announced its intention to erect a 150-ton selective flotation plant in Rico for the purpose of treating its own ores and those of other companies. Work on this mill is to begin immediately.

International Smelting Co. Active in Development Work

Development is being pushed as rapidly as possible by the International Smelting Co. Foundations are being laid on the Atlantic Cable property for a large double semi-Diesel Chicago Pneumatic air compressor which will serve the Atlantic Cable shaft, the Shamrock, and other properties on the west side of the river as well as a number of prospecting shafts, two of which are being sunk, one on the Gladford Smith property and the other on the Pete Fernando lots south of the Cable shaft. Retimbering of the Gray shaft is to be undertaken to develop the large known lead-zinc deposits in the Laura crosscut area.

Power for the Rico Mining & Reduction Co. is to be furnished by 500 hp. steam plant which will generate electricity. Coal for the steam unit of the plant will be secured from the Pasadena coal banks recently purchased by the company. At the Silver Swan mine, the company is building ore bins and a compressor house. A three drill compressor is being installed. Ore shipments started from the Silver Swan the week ended Sept. 12. Operations at the Argentine shaft of the company have been discontinued until new machinery, including an electric hoist and pump, can be installed. This will be accomplished by the time the mill is completed. Since a large tonnage of mill ore has been exposed in the mine, the company decided further development was uneconomical until the product could be treated.

Production of the Rico Argentine Mining Co. is averaging twenty-five tons daily, according to Fred Price, manager. Construction of a 1 600 foot "jigback" to transport ore from the lowest tunnel has been started. Completion of this tramway within thirty days will allow the company to increase its output to 100 tons daily. In the twelve limestone relacement beds, the company has developed a large tonnage of zinc-lead ore.

In the Union Carbonate group, operations under the direction of George Collins has opened up several feet of high-grade ore. As rapidly as facilities allow, more men are to be employed. The Union Carbonate has produced some rich ore.

Arizona Cinnabar Co. Constructing First Retort

The Arizona Cinnabar Co., whose property is about 23 miles north of the Roosevelt Dam, in Arizona, is reported to have begun construction work on the first retort frame at the mine. It is also reported that 3½ lb. of quicksilver was recently obtained from 22 lb. of ore taken from the property. Twelve patented and seven unpatented claims make up the property.

Copper-Gold Deposits Discovered in Clericy and Duparquet Townships, Quebec

Teck-Hughes Cuts Vein Extension at 1,480 Ft.—Monthly Gold Production Reports—Nipissing Declares Dividend.

It is reported that three new discoveries have been made within the last few days in the copper-gold district of Quebec, greatly enlarging the area in which copper sulphides have been found. On the Harvey claims in Clericy Township, copper sulphides are said to have been found over a width of 50 ft. Discoveries are also reported on the Ontabec No. 7 group, which is under option to the Victoria Syndicate, controlled by the Mond Nickel Co. interests. Another discovery, carrying copper in places up to 15 per cent, is reported from the Ontabec No. 5 group, approximately three miles from the Noranda. It has been traced for a length of 100 ft. and a width of 40 ft.

Surface work on a group of twenty claims in Duparquet Township, which is under option to the American Smelting & Refining Co., has encouraged the company to extend its operations, by diamond drilling. Duparquet Township lies to the northwest of Rouyn, and the geological formation is similar to that in Kirkland Lake, Ontario.

Kirkland Lake Railway Extension

It is believed that the T. & N. O. railway will have the Kirkland Lake branch extended to the Quebec boundary by the early winter and will be able to give service to that point. Negotiations are under way for the establishment of a fast stage and freight service from the end of steel to Rouyn, a distance of approximately 35 miles, and it is anticipated that a large amount of freight will go over this route during the coming winter.

The Teck-Hughes Mine, of Kirkland Lake, is reported to have cut the downward extension of the No. 3 vein at 1,480 ft. This vein, which is the main producer of the mine, was intercepted while cutting a station in the new shaft, which is now practically completed; and within the next few weeks three new levels—the 11th, 12th, and 13th—will be opened. The new mill addition will be completed some time in October, and the mill should then have a capacity of at least 250 tons a day. Preliminary crushing will be carried to a much finer stage than heretofore, so the exact tonnage which the enlarged mill will be able to handle cannot yet be determined.

The Lake Shore mill, which is now treating approximately 300 tons a day, is also being enlarged to handle 500 tons. A new hoist, the largest in Kirkland, has been installed, and skips are being put in for ore crushing. The crusher station is being excavated to the 900 level, and the ore passes to it will soon be completed.

The Teck-Hughes and the Lake Shore mines are the highest grade gold mines of corresponding size in Canada, if not on the continent. The average recovery for the Teck-Hughes for the first six months of 1925 was $19.36 a ton; for the Lake Shore it was $19.31. It is not known whether with the enlarged mill capacity it will be possible to maintain such a high grade, but in any event there will be a large margin of profit.

The Ontario Department of Mines is preparing to publish a monthly statement showing the gold output of the province. The individual production of the different mines will be shown, but any companies objecting to this will have their production shown without their names being attached to it. The department feels that the time has come for the publication of such figures, on account of the large public interest in the gold-mining industry.

The directors of the Nipissing Mining Co. have declared the regular quarterly dividend of 3 per cent, payable Oct. 20, to shareholders of record Sept. 30. The financial position as of Sept. 24, shows cash in the bank, investments, and value of ore and bullion in transit, on hand, and in process amounting to $4,282,509.

Reorganization of Argonaut Gold to Be Considered Oct. 9

J. A. Naud, vice-president and general manager of the Argonaut Gold mine, in the Kirkland Lake area, northern Ontario, has definitely announced that a plan for the reorganization of the company would be submitted for ratification to the annual meeting of the shareholders on Oct. 9. The new company would be known as Argonaut Consolidated Mines, Ltd., and would be capitalized at $3,500,000, the present shareholders to receive one new share for every two now held.

Mr. Naud stated that during the last six months the copper content of the ore had netted the company $54,000.

The copper, previously regarded as a detriment, is now an important factor of the output.

During the last half year the gold content of the ore averaged $8.94, but in the last three months the enriched ore now being handled has yielded approximately $10 in gold.

Geological Report on Beardmore District by Burrows

The Ontario Department of Mines has received a report from A. G. Burrows, Provincial Geologist, on the recent gold discoveries near Beardmore in the Port Arthur district of Ontario.

After describing the more important discoveries examined Mr. Burrows concludes his report as follows:

"While only a small amount of work has so far been done, it is apparent that the values are in the quartz veins which contain here and there some metallic sulphides, and arsenides with gold. The schist which encloses the veins does not appear to carry any appreciable sulphides; consequently, the veins, which are narrow, would need to be rich to be workable. A number of chip samples were taken, and the results from these were mostly low in gold content. Selected specimens of well-mineralized quartz taken from several points either from the dump or in place gave high values up to $58.50 in gold. Visible gold was noted in the quartz at two outcrops."

Goodsprings, Nev., a Producer of Vanadium-Lead Ore

Yellow Pine Pays Dividends of $40,000 Quarterly—Potosi Mine Reopened —Other Operations

Present indications are that the Goodsprings district of Nevada may become a large producer of vanadium. At the Ewing mine, eight miles west of Goodsprings, operated by the Master Alloy Mining Co., a large tonnage of this ore has been blocked out. Other deposits are found on adjoining claims as well as at other points in the district. By water concentration similar to that used in concentrating lead ores, a lead-vanadium concentrate worth $150 a ton on the cars at Jean is obtained. The small mill is being remodeled and additional machinery will be installed. Concentrate made at this mill is said to contain 11 per cent vanadic oxide and 40 per cent lead.

Nevada's largest producer of lead and zinc, the Yellow Pine Mining Co., at Goodsprings, is working 45 men and shipping 40 tons of lead-zinc ore daily to a Kansas smelter. This company, which since 1912 has produced between $7,000,000 and $8,000,000 and paid dividends aggregating more than $3,000,000, is still paying profits to its stockholders at the rate of $40,000 quarterly. The company's mill is not being operated, as with present high metal prices it is found more profitable to ship crude ore direct to the smelter.

The high price of lead and zinc is stimulating activity at other Goodsprings properties. At the Bullion property Jack and Phil Smith are operating a small concentrator on dump ore and tailings from an old dry concentrator. At the old Potosi mine, reputed to be the oldest mine in the state, zinc ore is being produced by Robbins and Shelby, who are working the property under a lease from the Empire Zinc Co.

Tonopah Western Repairing Surface Plant and Main Shaft

Water Under Control at Tonopah Extension—Divide Sinking Winze From 1,600 Level

The Tonopah Western, operating at Tonopah, Nev., has started repair work on both the surface plant and the Great Western shaft. This shaft is 1,150 ft. deep, the upper 600 ft. of four compartments, the remainder of but two compartments. It is planned to enlarge the shaft to four compartments to the 850 level, where the pumps are stationed, dewater the shaft to the bottom, enlarge the remainder to four compartments, and then sink an additional 100 ft. before starting lateral development. The work is in charge of P. F. Minister, formerly with the East Butte Copper Co., at Butte, Mont., which company controls the Tonopah Western.

With the completion of its second 2,000 hp. Diesel unit, the Tonopah Extension has its water problem pretty well in hand, and has already resumed stoping and development on the 2,000 and 2,125 levels west. Bullion production by the Tonopah Extension for August totaled $82,742, and operating loss for the month was $13,145.80, which is about one-half that of recent previous months. Bullion produced during the first two weeks of September was 57,300 oz., worth $49,000.

The Tonopah Divide Mining Co. has made excellent progress in sinking the winze from the 1,600 level of its Tonopah Midway mine. The winze has reached a depth of 260 ft. below the 1,600 level. Some water has been encountered in sinking, but not enough to delay operations materially. The winze was started on the hanging wall of a low-grade 60-ft. vein, believed to be the easterly continuation of the Murray vein, the principal producer of the Tonopah Extension mine, but has passed into the footwall, due to flattening of the vein. This is one of the most important pieces of development work now being carried on in the Tonopah district, and it is being closely watched by all who are interested in the future of Tonopah.

All work, except pumping, has been temporarily suspended from the Gypsy Queen shaft by the Reorganized Montana Tonopah, with no definite future plans announced. It is rumored that the Montana Tonopah company is negotiating with the Gypsy Queen a new plan of consolidation which will do away with the present unsatisfactory lease arrangement.

The Rescue Eula is crosscutting on the 1,200 level, driving westerly from the Buckeye Belmont shaft, and expects soon to pick up the Green Vein. This vein showed a commercial oreshoot on the 1,100 level, and was stoped 60 ft. above this level, producing over 2,000 tons of ore.

Tonopah School of Mines Begins Fall Term

THE Tonopah School of Mines has opened the fall term with a class of twenty-five enrolled. Practical and theoretical courses in mining and metallurgy are given, and any miner who wishes to increase his knowledge and usefulness, with possibilities of financial betterment for himself, is entitled to enroll. E. W. Durfee, a mining engineer with many years' successful practical experience in mining, is in charge.

Ocher Deposits Under Development in Washington

Fifteen thousand to twenty-five thousand dollars, says F. W. Thom, president and general manager, will be expended by the Spokane Ocher Mining Co., 61 miles north of Spokane, on a plant to pulverize ocher. The claims contain large deposits of ocher. The ocher and amber are 96.58 to 98.30 per cent pure. The deposits cover sixty acres. Eastern manufacturers of colors have had their representatives examine the property, and they are asking for carload quotations. The operators believe that they can put the mineral on board cars at Springdale, Wash., for less than $10 a ton.

Flotation Plant to Be Installed by Jib Consolidated

Nigger Hill Development, Near Elliston, Mont., Contracts for Machinery—Monarch to Resume

The Jib Consolidated Mining Co., at Basin, has installed a centrifugal pump at its tailings dam and is pumping back into the mill the higher-grade tailings resultant from the bonanza ore treated last year. The company plans to retreat, by flotation, about 300 tons of tailings per day. Operations also include the hoisting and milling of a substantial amount of medium-grade ore from the Katie mine. The new East Katie shaft is down approximately 180 ft. August Grunert is in charge of operations.

The Nigger Hill Development Co., financed by Minneapolis capitalists headed by C. M. Roos, has taken over several claims contiguous to the old "Julia" property, near Elliston, Mont. Work will proceed through the Julia shaft, it being planned to drive a long drift from the lower workings. A contract for mining equipment has been let to the Butte Machinery Co. John Roos is in charge of operations and Charles J. Stone, of Butte, is consulting engineer.

Chicago investors are making an examination of the Monarch group of claims on Bull Mountain, near Elliston. The property is equipped with a concentration and flotation plant, which last was operated in 1920. It is reported that the same investors also contemplate taking over the Big Dick and several other claims in the vicinity, with the purpose of treating the ore from all the properties at the Monarch mill.

Gilbert Clifford Mines Co. Discovers New Orebody in Old Mine

The Gilbert Clifford Mines Co., which holds an option on the old Clifford property, 47 miles east of Tonopah, Nev., is conducting an energetic campaign of development and advertising. Ore from old dumps and from the mine is being shipped to the West End mill, at Tonopah. The Clifford mine occupies a small knoll on the westerly edge of the Kawich range, and has produced high-grade silver and gold ore from shallow surface workings, probably not over 100 ft. in depth. Deeper workings have so far failed to disclose commercial ore, although sulphides containing low silver-gold values have been found on the 200 level. Development work is now being carried on.

The property was located about twenty years ago, and the high-grade ore attracted many, causing quite a boom at that time. It has been optioned several times, and substantial payments have been made, but the options were not exercised, and the property invariably reverted to the owners. The present option holders have discovered new oreshoots containing rich ore, and are preparing to accelerate shipments. Since acquiring the option, the Gilbert Clifford Co. has shipped about 400 tons of ore assaying from $18 to $30 per ton.

Alaska Agricultural College and School of Mines Opens

Institution in Far North Begins Fourth Year— Partly Supported by Federal Aid— Three Graduates in 1924

By John A. Davis
Washington, D. C.

THE Alaska Agricultural College and School of Mines at Fairbanks, the Farthest North institution of higher learning, has just begun its fourth year of work. It was built and is maintained by the Territory of Alaska on land provided by the Federal Government. The original building was 52 ft. wide, 85 ft. long, and three stories high, but in 1924 a wing was added, which doubled the available space, and a second wing, as well as a power plant, are now under construction. During the present year dormitories are also being built to provide much-needed housing facilities for students.

In addition to appropriations from the territory for maintenance, the college receives $50,000 annually from the Federal Government. This money is available for instruction in agriculture, the mechanical arts, English, and the various branches of mathematical, physical, natural and economic science, with special reference to their application to the industries.

Four-year courses of instruction are offered which lead to the degree of Bachelor of Science in the following branches: agriculture, business administration, chemistry, civil engineering, general science, home economics, and mining engineering. The subjects comprised in these courses and the entrance requirements are comparable to those of similar colleges in the States. In addition, short courses of ten weeks are given in mining, agriculture, and home economics, which find popularity with adults. There are no charges for tuition.

The laboratories are well equipped, particularly those for chemistry, physics, and ore dressing, while a gold-bearing quartz ledge on the college campus is being developed by the students as an experimental mine and affords an opportunity for practical work in surveying, drilling, timbering, and other mining problems. Under a co-operative agreement effective July 1, 1925, the metallurgical laboratory of the Alaska station of the Bureau of Mines, formerly at Fairbanks, was consolidated with that of the college, thus insuring ample equipment for the study of this branch of mining engineering.

The college is most advantageously situated with respect to the mining industry of the territory. The great low-grade gold deposits near Juneau and the exceptionally rich copper deposits at Kennecott are familiar background for most of the students. The Fairbanks district itself is an important placer mining center, especially in view of the revival of placer mining through the large-scale dredging projects now under way. Within a short journey by rail are the coal deposits of the Nenana and Healy River fields, with their unusually thick beds of sub-bituminous coal, while the variety of ores available to the student of mining and metallurgy includes silver, lead, tin, platinum, tungsten, antimony, and others.

Three students entering here from other colleges have already been graduated, and this its quadrennial should witness the graduation of several more who have completed their entire course at this American college, situated near the Arctic Circle.

Alaska School of Mines. Experimental mine in foreground

Photo by Galloway

Students, Alaska School of Mines

New Mining Companies at Grass Valley

At Grass Valley, Calif., the Sequoia Gold Mines Co., incorporated in Nevada, has been formed to take over the Woods tract west of Grass Valley. The incorporators are Cooley Butler, David Ward, and E. J. Wilson. The Valley Mining Co., also recently incorporated, is to operate the Golden Center mine. T. F. Cole is said to have acquired a controlling interest.

California Rand Silver, Inc., Pays $25,600 Dividend

Alfred H. Hornell, president of California Rand Silver, Inc., states that "during August normal conditions were restored in the mill, following a shutdown of about six weeks, due to the collapse of the Yellow Aster water system, upon which the property depends for its water supply. In connection with the diminished revenue for the month, there was no ore in transit to the smelter on Aug. 1, and of the thirteen cars produced and shipped during the month, there have been returns on only six. The mine and mill are in steady operation, and September should make the usual satisfactory showing."

Mono Mining Co.'s Mill Is Nearing Completion

The Mono Mining Co. near Bridgeport, Calif., has almost completed its 100-ton milling unit. A 5,200-ft. wire-rope tramway is under construction. The company is also replacing a 20-mile pipe line with wood-stave pipe at its power plant on Green Creek.

Quincy No. 2 Hoist Has Capacity for 13,000 Ft.

Quincy's No. 2 shaft, Michigan copper district, has the largest drum hoist in the world. It is capable of functioning to a depth of 13,000 ft., so that the shaft can be sunk much deeper. The shaft is bottomed at the 86th level and the ore is probably the richest in the history of this shaft. Miners are continually encountering large masses, the metal being so heavy in places that it retards the drills.

Recent Improvements at Calumet & Hecla

Calumet & Hecla Consolidated, in the Michigan copper district, is nearing the end of its extensive program of construction and improvements looking toward a lowering of production costs. Among the completed projects are the haulage tunnel in the conglomerate department, which will permit the mining of copper ore below level 81 at reasonable cost and which will become of greater value as the ground is opened from year to year; the new Tamarack reclamation plant, which is recovering copper from waste conglomerate sands at a cost under 9c. per pound; and a new railroad between the Ahmeek mine and stamp mill, which will lower transportation costs.

Projects nearing completion are the construction of a new 125-ton melting furnace and overhauling of two other large units for refining purposes at the smelter; and installation of powerful electric pumps in Tamarack No. 5 shaft, which will reduce the cost of draining the conglomerate and Osceola lode shafts. In addition, the consolidation of the properties will permit of the mining of copper areas through fewer shafts. Exploratory work also is under way at several points, notably in La Salle, Cliff, and Ahmeek lands.

Calumet & Hecla is therefore prepared, when demand requires, to enlarge production considerably with a much smaller number of men than were employed before and during the war.

Montana Mine, in Oro Blanco District, Sold for $125,000

One of the most important mine transactions effected since the sale of the mineral segregation of the Baca Float, nearly a year ago, was consummated with the purchase by W. V. Thompson, Hollywood capitalist, of the Montana mine, in the Oro Blanco district, southwest of Tucson, Ariz. Negotiations were conducted by Rush T. Sill, metallurgist, Los Angeles, who accompanied Mr. Thompson to the property. The sale was made by A. A. Worsley, E. W. Walker, and Charles F. Hanson, who held an option on the Montana, whose owner was L. Zeckendorf, of New York City. The price paid is said to have been $125,000. A first payment of $40,000 within a few months is called for in the contract of sale. The work of unwatering the mine is now proceeding.

Gold Hunter Develops Atlas Property

THE Gold Hunter Mines, Inc., the new name for one of the oldest operating companies in the Coeur d'Alene district of Idaho, after confining its activities for many years exclusively to the Gold Hunter mine, at Mullan, has recently acquired control of the Atlas Mining Co., which owns a large group of claims adjacent to the Gold Hunter. It is now carrying out an extensive development program under the management of W. Earl Greenough.

The Atlas company was organized by Mr. Greenough, who conducted the negotiations, and who is now succeeded in the management by C. L. Herrick, manager of the Gold Hunter. A meeting of Atlas stockholders was recently held at Mullan, which was attended by Thomas F. Keeley, of Chicago, president of the Gold Hunter company, when the transfer was formally made and a new board of directors was elected. Mr. Keeley was elected president, Mr. Greenough vice-president, and Mr. Herrick secretary and manager.

The Atlas company is driving a crosscut tunnel that will cut three veins at great depth. Its total length will be 6,000 ft., and 1,600 ft. has now been completed. It is in the "south side," a section which has remarkable surface indications of lead-silver, but in which no permanent ore deposits have been found. The Atlas enterprise is therefore of unusual interest, as it is the first attempt on a large scale to prove that section at depth. If it opens commercial ore, a large productive area will be added to the Coeur d'Alene district.

Montana-Washington Mines, Inc., Testing Placer Ground in Bitter Root Valley

The Montana-Washington Mines, Inc., owns a thousand acres of deep gravel along the lower reaches of Hughes Creek, Montana, and has spent the last two years in sampling and exploring the deposits, with the intention of installing a dredge. The work is under the management of Calvin H. Barkdull. Conditions have proved favorable for dredging operations. So far no large boulders have been encountered, and ample water is available for hydroelectric power. On the upper reaches of the creek where the bedrock is not more than 10 ft. deep a number of miners and lessees have been mining the shallow placers by hydraulic, dragline, and pick-and-shovel methods.

Hughes Creek is the east branch of the Bitter-Root River, about 120 miles south of Missoula, Mont., and 30 miles south of the Bitter Root branch of the Great Northern R.R. From Darby, the terminal of the railroad, there extends a fine auto road to the property.

Tobin and Odgers Mine to Be Connected by 5,000-Ft. Drift

An 8x8ft. rock drift 5,000 ft. long is being driven between the Odgers and Tobin mines, on the Menominee range, Michigan. Using two drills with four men, 550 to 600 ft. per month has been driven, with a record advance of 342 ft. in twelve days. Two rounds of 6 ft. holes are shot per shift. Mechanical equipment is used for mucking.

The men are working on contract, with a bonus, and the cycle of operations has been so arranged that this rapid advance is steady and frictionless.

New Jersey Zinc Co. Lithopone Patents in Litigation

The New Jersey Zinc Co., New York, alleges infringements on five patents covering improvements in the manufacture of lithopone. The company has filed a bill asking for an injunction in the United States District Court against the E. I. du Pont de Nemours company.

It is charged that the du Pont company is using and causing to be used methods of manufacture of lithopone embodying the inventions claimed by the plaintiff.

H. & M. Mine, Cardin, Okla., Sold for $300,000

The H. & M. mine, near Cardin, Okla., in the Joplin-Miami district, has been sold by Ed. MacKay and the Hare interests of Miami to Malcolm Green, of Boston; John B. Green, of Chicago; and T. F. Lennan, of Joplin, Mo. This property includes a 40-acre tract in the heart of the producing section just east of Cardin, and a 200-ton concentrator. One-half the lease was worked formerly in connection with the old Republic mine and the other half with the Sinden. Recent drilling on previously unexplored sections has disclosed good ore showings.

The new owners announce that the mill will be doubled in capacity, and full development undertaken.

The consideration was not officially stated, but is understood to have been about $300,000.

Malcolm Green is associated with Lennan in the Oko mine, at Picher, and the two own a half interest in the Quapaw Mining Co.'s Chubb mine, the other half being owned by the Quapaw Mining Corporation, which is controlled by Charles M. Schwab.

Pinto Valley Co. Claims Large Body of Low-Grade Ore

The disseminated ore body in Block 3 at the Cactus division of the Pinto Valley Co., Globe, Ariz., has been proven for a length of over 1,000 ft. in an easterly and westerly direction, the company claims. The copper occurs in both oxide and sulphide form, and the ore will undoubtedly make a first-class leaching product. The results check closely, as to grade, with records of work done by the Cactus Cons. Min. Co., in 1910, former owners, but the tonnage will be much greater than anything heretofore indicated.

News From Washington

By PAUL WOOTON
Special Correspondent

Aluminum Company Denies Violation of Clayton Act—Admits It Is Sole Producer of Ingots

The Aluminum Company of America admits, in its reply to a complaint to the Federal Trade Commission, that it is the sole manufacturer in the United States of aluminum ingots, made from bauxite. The allegation in the complaint that the Aluminum company produces more than 95 per cent of the virgin sheet is denied, as is the statement that the United States Smelting & Refining Co. is its sole competitor in the manufacture of sheet aluminum.

The Aluminum company denies that it "has adopted and maintained the practice of entering into contracts or agreements for the sale and is now selling and making contracts for the sale in interstate commerce of virgin sheet aluminum to manufacturing foundries at prices less than they have been and are selling said virgin sheet aluminum to jobbing foundries." The company also denies that it has contracts with certain consumers at prices below those made to other comparable consumers, on the condition that aluminum scrap resulting from their manufacturing operations be sold to the Aluminum Company of America. The company admits that it pays higher prices for certain qualities of scrap aluminum than it costs to manufacture primary aluminum. It also admits the transfer of primary aluminum to subsidiaries at arbitrary prices, as this "is a customary and convenient way of handling such transactions."

Patents Expired in 1907

In its reply the Aluminum company points out that it has been engaged in the manufacture of aluminum since 1888, in accordance with methods set forth in its patents, which give it a lawful monopoly in the manufacture of aluminum during their life. Although the last of these patents expired in 1907, the same processes are still in use. It is declared that since the expiration of these patents the company has done nothing to prevent any one from engaging in the manufacture or fabrication of aluminum.

When the company began the manufacture of aluminum, it is set forth, there was no commercial market for the product. This made it necessary for the company to fabricate the metal into shape in which it could be used and to induce the public to use it as a substitute for other metals. The company, it is stated, has devoted its time to the production of aluminum in quantities sufficient for the public requirements and has made a metal of the best possible quality. It admits having encouraged and aided others to embark in the fabrication and use of articles made from the metal. Its policy is said to have been to give the consumers of aluminum the advantage of the lowest possible prices. Such complaints as have arisen against the company come largely from middlemen, it is asserted, who have found that the company's policy limits their profits.

Blank denial is made of any violation by the company of the Clayton Act.

Internal Revenue Rules No General Revaluation of Silver Mines Necessary

The U. S. Commissioner of Internal Revenue has ruled that no general revaluation of silver mines is necessary, in the matter of revaluing such properties for taxation purposes. He finds, however, that errors were made in some of the original valuations. These, he holds, should be corrected.

Though the complete text of the commissioner's ruling has not been prepared, the salient portion of it has been furnished to Senator Oddie, and reads as follows:

Basis of Valuation to Be 65c.

"The question of the future price of silver which should be used in an analytical appraisal to determine the value of a silver property as of March 1, 1913, is not one which can be determined with mathematical accuracy. It is the judgment of the Engineering Division that a silver price of $0.5778 should be used. It was the judgment of the engineers who made the original valuations that a price of 65c. should be used. I am convinced after careful consideration of the question that a correct result can be reached by the use of a 65c. price of silver, if the other factors of valuation are relatively correct. Consequently no general revaluation of the silver properties should be made in order to change the 65c. price of silver, and in those revaluations which, because of previous errors, must be made, the silver price should not be changed.

Errors to Be Corrected

"Although in my opinion no general revaluation of silver properties is necessary, it nevertheless appears that errors were made in some of the original valuations. This is necessarily so in view of the haste in which some of the original valuations were made, and in view of the limited data then before the department. The use of a 65c. price of silver, which anticipates a future increase, necessitates the use of a production cost higher than that shown by operations prior to March 1, 1913. Those cases, therefore, in which a 65c. price of silver was used in the original valuation, but where costs were based upon operations prior to March 1, 1913, should be corrected and the costs adjusted on the basis of an anticipated increase over prior costs. Moreover, the examination of the typical silver cases selected indicates that in some cases other gross errors of valuation were made due to lack of time and data, such as incorrect or not substantiated estimates of (1) ore reserves, (2) grade of reserves, (3) recovery, (4) expected plant additions, (5) plant equipment and development on basic date, (6) life of mine, and (7) risk rate. Gross errors in the determination of these or other valuation factors should be corrected. In those cases where revaluation is made to correct such an error in the prior valuation, the corrected value should apply to all years action on which is not barred by the statute of limitations.

"If the Metals and Non-Metals Section determines, in accordance with the conclusions set out above, that an error was made in the original valuation of a silver property, and consequently that the property should be revalued, a memorandum should be prepared to the Commissioner of Internal Revenue requesting authority to revalue the property. This memorandum should state in full the reasons and evidence supporting the proposed revaluation, and final action on the matter of the revaluation should be withheld awaiting instructions from the commissioner."

Lowly Badger Reveals Rich Carbonates

By A. J. Dunn, Wallace, Idaho

The story of how the great Bunker Hill & Sullivan mine, in the Cœur d'Alene district, Idaho, was discovered forty years ago by two prospectors and a jackass has been told so often that it has become a tradition in the mining camps of the West. And now comes another story of rich mineral discovery somewhat similar to the Bunker Hill, in which a prospector, a sheepherder, and a badger are the principals.

The discovery was made about a month ago in Lemhi County, Idaho. A prospector with his packhorse chanced to fall in with a sheepherder, and both, glad to have company to break the monotony of their lonely lives, plodded along the road that leads to the old Nicholia mine, long abandoned, but which thirty-five years ago was a large producer of lead and silver. The prospector's restless eyes were ever scanning the surface along the road, and as they approached the old mine his attention was arrested by the unusual appearance of the "dump" at the mouth of a badger hole near the roadside. This dumps meant nothing to the sheepherder, but the trained eye of the prospector, when he picked up a handful of dirt to examine it, quickly identified it as sand carbonates, the same class of ore that was mined years ago at the Nicholia. Samples of the ore assayed contained 800 oz. in silver and a high percentage of lead.

According to latest report, the oreshoot has been uncovered for a length of 200 ft., and averages 8 ft. wide. The ore is hauled by motor trucks 18 miles to Gilmore, the nearest railroad point, and there shipped to Salt Lake smelter.

The badger, the original discoverer, made his getaway and has doubtless picked a place to burrow another hole in soil so poor that it will not tempt the cupidity of man.

British Trade With Russia Expanding

The British returns for July showed that the trade between Russia and Great Britain has been expanding rapidly, according to the U. S. Department of Commerce. The increase in Russian trade is especially interesting, in view of the fact that the defeat of the Labor Party late in 1924 carried with it a rejection of the loan to Russia. British imports from Russia for the first half of 1923 totaled £1,952,177; for the same period of 1924, £4,590,561; and for 1925 they increased to £9,142,112. British exports to Russia in the first half of 1923 were £1,292,502; for the same period of 1924 they were £663,531, but in 1925 they were £2,878,832. For the same periods, re-exports of foreign produce shipped through the United Kingdom to Russia were £611,542, £2,766,261 and £6,512,317.

New Mining Companies Operating in Topia District, Mexico

Mining in the Topia district, Mexico, is unusually active. Several new companies are planning to operate properties in the district. One of the largest of these is the Cia. Minera y Fundidora del Valle de Topia, which has taken over the Marfil mines. New equipment will be installed with the view of increasing the production of silver-lead ore. Leopoldo de la Vega has purchased the Milagro and other mines in the Topia district and is preparing to place them on a good production basis. The ores carry gold and silver. In the Yerbabuena district a group of claims has been purchased by J. W. Elmer and J. Crawford. They are preparing to start development work on a considerable scale.

Attention has been attracted to the Guanacevi district by the recent purchase of the Josefina mines by Dr. Alfredo Espana. He will equip the property with modern machinery and start development. A number of claims in the Guanacevi district have been located by Julio Contreas. The ores contain gold and silver.

McIntyre-Porcupine Develops Good Ore on 2,625 Level

At the annual shareholders' meeting of the McIntyre-Porcupine, of Porcupine, northern Ontario, at Toronto, on Sept. 24, R. J. Ennis, general manager, outlined the work that is being done. He stated that some rich ore had been opened up on the 2,625 level, where two parallel lenses had been found showing from $18 to $26 per ton. From the location of these an ore structure in the west, similar to the highly profitable North No. 5 system in the east, was indicated.

On the Jupiter claim it had earlier been thought that no great amount of ore would be encountered above the 1,875 level, but recent workings resulted in the discovery of a good tonnage above that horizon, which would be handled through the new shaft. Stations at the new shaft, he said, were now being cut at 250-ft. intervals above the 1,875 level, and at 125-ft. intervals below that depth.

London Letter

By W. A. Doman

Special Correspondent

Lead Ore Discovered in Old Derbyshire Mine

Union Corporation, Ltd., Enters Artificial Silk Business—Gold Coast Explorers Acquire Old Prestea Mine

London, Sept. 15—A discovery of lead has been made at the Blobber mine, Worksworth, Derbyshire. According to a local journal, development resulted in the striking of a galena vein, varying in thickness from 6 to 20 in. As far back as 1825 it was stated that the lead in this mine is detached, making mining all the more easy, as the only mineral to remove is wet clay which fills up the remainder of the mineral veins. Exploration of the workings now pumped out disclosed some old mining tools. Development work is being done in widening the lower section of the shaft, and here large quantities of lead ore have been found, explaining why the old owners took such pains to drain the mine in the days before pumping. It is said that with a modern pumping plant installed, there is every prospect that the Blobber mine may do well.

The Union Corporation, Ltd., which is largely interested in South African mining and in the San Francisco Mines of Mexico, has made a departure. Like the Consolidated Gold Fields, it has gone into the artificial silk business. The company in which it has taken a participation has a share and debenture capital of £1,000,000 and has acquired the rights for the British Empire, apart from Canada, of the Enka company, a Dutch undertaking. It is working in conjunction with the Maekubee company, also Dutch. The Union Corporation is further interested in a cotton enterprise in South Africa.

I mentioned recently that the Gold Coast Explorers had acquired from the liquidator all of the assets of the Prestea Block A Mine, in West Africa. The payment therefor was only £20,000, and I understand that the manager of the mine, when he learned of the price, cabled suggesting that it was too low and should not be accepted. His message arrived too late. A financial group has put up the necessary purchase price and working capital, and new shares are to be issued.

A fire occurred recently at the Mount Morgan (Queensland) mine, where the men are on strike. It is not suggested that there has been incendiarism; on the contrary, when the strikers heard of the fire they endeavored to stifle it, but the sulphur fumes proved too great an obstacle. The fire is now under control, though it will be many months before operations can be resumed.

Haultain Silver Mine in Good Ore —Mill Near Completion

Rich ore has been encountered at the Haultain silver mine, in the Gowganda area, northern Ontario. The 15-ton mill is nearly completed and is expected to be ready for operation in October.

France Has Record Iron and Steel Production

France produced over 724,000 metric tons of pig iron and 625,000 tons of steel ingots and castings in July, 1925, which constitutes a new record for both classes of products, according to the U. S. Department of Commerce. It is anticipated that the August output will at least maintain the same level if it does not exceed it.

The entente of phosphorus pig iron producers for the control of domestic prices and production will, it is reported, be indefinitely extended upon the expiration of the present agreement, which terminated Sept. 30. The domestic price entente of the hematite pig iron producers was signed on Sept. 5. On the first of August 144 blast furnaces were active, 33 furnaces ready to operate, and 43 blast furnaces under construction or repair.

Mineral Production of Ontario for First Six Months of 1925 Valued at $41,560,000

The report of the Ontario Department of Mines for the first six months of 1925 shows a total mineral output valued at $41,560,000, an increase of $3,500,000 compared with the corresponding period in 1924. Of this amount $29,500,000 was the value of the metallic production; the non-metallic production was $4,000,000, and the clay products and structural materials $8,000,000. The chief increase was in the production of gold, which had a total value of $14,500,000, compared with $11,800,000 for the corresponding period of the previous year.

The production of silver was 5,602,000 oz., an increase of 600,000 oz., and as the average price during the period was higher than in the corresponding period in 1924, the total returns were proportionately greater. Though the Cobalt area itself shows a slight falling off in production, this was more than made up by the increased output of South Lorrain and Gowganda. The average price of silver during the period was 68.05c. per ounce. Of the total output of fine ounces of bullion, 2,300,000 oz. was produced by reduction works in the Cobalt area.

Owing to the closing down of the British America Nickel Corporation, there was a small decrease in the output of nickel during the first six months of 1925, only 617,800 tons of ore being smelted as against 707,000. The matte production, however, was 33,704 tons, an increase of 500 tons, which indicates that a higher grade of ore was treated. Only one Canadian Refinery was operated during the period, the value of the output being $13,600,000, compared with $8,300,000 in the same period of 1924. The output of metallic cobalt and its salts was valued at $1,110,000, which represents a substantial increase, and nickel oxide valued at $1,570,000 compared with $900,000 in the corresponding period of 1924.

The non-metallic minerals, valued at $4,000,000, showed a decrease of $300,000, and clay products and structural materials valued at $8,000,000 recorded a decrease of $950,000.

Societies, Addresses, and Reports

Bain Attends First Fall Meeting in San Francisco

Coast Section of A.I.M.E. Hears Financial Status—T. A. Rickard Presents Paper on Katanga Copper

The first meeting of the San Francisco section of the American Institute of Mining and Metallurgical Engineers after the summer recess was held on Sept. 15, 1925, at the Engineers' Club in San Francisco. A. A. Hanks presided. H. Foster Bain, secretary of the Institute, was present and was introduced to the section by Mr. Hanks. Secretary Bain discussed the finances of the Institute in more or less detail. He stated that the assets totaled $750,000, of which $490 000 was in real estate and buildings. The largest fund is the Douglas Library Fund of $100,000. the interest of which does not quite suffice for the library expense apportioned to the mining engineers. Receipts and expenditures are around $200,000, the members' dues totaling $109,000 and the return of the magazines being about $63,000 per annum. Dr. Bain said that members pay $13 per year, but get a return equivalent to $20 to $25 per year. The magazine balances itself, costing about the same as the gross income from this source. The membership is stationary at about 8 800 to 9,000. The Institute is operated on a budget plan. Since 1920, its financial position has been improved to the extent of about $30,000. As a consequence, in the last few years the Institute has been placed in a sounder financial position than formerly.

Abbot A. Hanks reported on the Salt Lake meeting and stated that the Institute was in debt to the Salt Lake Section for the excellent entertainment given to the visiting members. He then introduced the speaker of the evening, T. A. Rickard, who presented a paper on the Katanga copper deposits. in which he commented upon the conditions of the country and the mining, milling, and smelting practice at the Katanga mines. A large attendance was present and close attention was given to Mr. Rickard's paper.

Canadian Mining Institute Convenes at Winnipeg Nov. 3-5

Unusual interest is manifest throughout the Dominion of Canada in the convention of the Canadian Institute of Mining and Metallurgy, which is to be held in Winnipeg, Nov. 3 to 5. This increased interest is accounted for by the development of the mineral areas of Manitoba and the entry into that territory of many of the country's largest operators. Indications are that the meeting will be largely attended.

The program includes addresses on: "The Mineral Trade of Canada," by Charles Camsell, Deputy Minister of Mines; "The Half Year in Canadian Production," by S. J. Cook; "Prospecting Areas in Manitoba," by J. S. De Lury; "Mineral Deposits of the Hudson Bay Territory," by Dr. R. C. Wallace; "Power Possibilities of the Nelson River," by C. H. Attwood, and numerous other addresses by prominent speakers.

A feature of the program will be an all-day excursion to the Manitoba Power Co.'s plant on the Winnipeg River.

California Miners Confer and "Resolve" at Grass Valley

Want Federal Tax Relief for Gold Operators, and Simplification of Securities Act

At a regional meeting called by the California Development Association, in the interest of mining at Grass Valley, on Sept. 15, 1925, Charles S. Knight, manager of the association, advocated ascertaining the important causes of the mining depression and then attempting to devise methods for improving the condition of this industry. F. W. Nobs, general manager of the Empire Mines, was chairman of the meeting, which was attended by about fifty mining men. Various resolutions were presented and discussed. J. D. Stewart offered resolutions asking relief for the gold miners from federal taxes and suggesting that data be compiled indicating the amount of federal taxes of all kinds paid by the gold-mining industry. He also advocated the abolishment of the bond requirement provision in the Stock-Raising Homestead Act. Another resolution asked for the revision and simplification of the California Corporate Securities Act in so far as it relates to mining enterprises.

James K. O'Brien, of Smartsville, offered a resolution calling upon the mining men present to pledge themselves to work for the rehabilitation of hydraulic mining and providing for the compilation of a report upon the present status of hydraulic mining and its future possibilities. As a result of the discussion of the new anti-high grading law, F. W. Nobs presented a resolution pledging support of the enforcement of this law.

Bert Hews, of Sacramento, presented a resolution requesting the state prison board to take no further action on the proposed exchange of the Folsom dam site for farm lands in Sutter Basin until the California Debris Commission had passed upon the most suitable sites for debris storage dams. Charles S. Knight offered a resolution urging the necessity for a non-metallic mineral survey and recommending the use of California materials wherever possible in building projects. Other resolutions of lesser importance were offered.

The regional meeting is a preliminary to the work of various committees under the leadership of Charles W. Merrill. Three other regional meetings are to be held and the results of these meetings after consideration by committees are to be presented at a state meeting of mining interests for final action.

American Silver Producers Will Incorporate in Utah

The American Silver Producers' Association has taken steps to incorporate under the laws of the State of Utah. Necessary preliminaries were initiated at a recent meeting held in Salt Lake City. W. Mont Ferry, president of the organization, presided. Henry M. Rives, secretary-treasurer, of Reno, Nev., was in attendance.

The order of business was in conformity with the resolutions adopted by the board of directors on Aug. 10, when it was decided to incorporate under Utah laws with constitution and by-laws the same as those of the association before it assumed corporate existence. The incorporation will make the association a more efficient body and give it definite legal entity. The first annual meeting of members will take place on the second Monday of October, 1926.

Officers, who are as follows, will continue: W. Mont Ferry, president; F. M. Smith, first vice-president; Robert E. Tally, second vice-president, and Henry M. Rives, secretary-treasurer.

The board of directors is as follows: W. Mont Ferry, E. D. Raddatz, F. Y. Robertson, of New York; L. O. Evans and E. V. Daveler, of Montana; A. M. Morris, Arizona; Alfred Harrell, California; John G. Kirchen, Nevada; Clyde A. Heller, Nevada; F. M. Smith, Washington; Jerome J. Dav. Idaho; Jesse McDonald, Colorado; William Loeb, Jr., New York; C. E. Kelley, of New York, and F. H. Brownell, of New York. The executive committee consists of W. Mont Ferry, C. F. Kelley, John G. Kirchen, William Loeb, and F. M. Smith.

Hotchkiss Advocates Research in Treatment of Low-Grade Ore

At the recent meeting of the Upper Peninsula of Michigan section of the American Institute of Mining and Metallurgical Engineers at Iron Mountain, Dr. W. O. Hotchkiss, newly elected president of the Michigan College of Mines at Houghton, emphasized the importance of conducting research work at this time to make low-grade ores commercially profitable. Dr. Hotchkiss was formerly state geologist of Wisconsin.

While the supply of high-grade ores in the Upper Peninsula will last for some time, he said, they will eventually become exhausted and the only mineral resources left will be low grade. This is the time, he asserted, for research work for the purpose of discovering methods that will make the mining of the low grades feasible. The task will require a long period and considerable money, he stated, and should be undertaken before the supply of high-grade ores is gone.

Other speakers at the institute included William Kelly of Iron Mountain, past president of the Institute, and O. M. Schaus of Ironwood, general superintendent of the Oglebay-Norton properties. More than 80 per cent of the upper peninsula membership was in attendance at the session.

Men You Should Know About

R. H. Malcolm, mine operator of Kingman, Ariz., is in New York.

E. L. Oliver, of San Francisco, is in New York from San Francisco for a brief visit.

Seeley W. Mudd, mining engineer of Los Angeles, is in San Francisco on a short business trip.

Wilbur Judson has returned to New York from a visit of inspection at the Sulphur mines in Texas.

S. H. Dolbear is in New York from Thetford Mines, Quebec, on business connected with the asbestos industry.

Charles Hardy, president of the Associated Metals & Minerals Corporation, has returned from a business trip to Mexico.

Frederic R. Weekes is moving his office from Toronto to 407 Canada Cement Co. Building, Phillips Square, Montreal.

J. A. Naud, vice-president of the Argonaut, of the Kirkland Lake area, northern Ontario, has been appointed general manager.

D. J. Moran, of Houston, Tex., vice-president and general manager of production of the Texas Company, was in New York recently.

Dorsey A. Lyon, acting director of the Bureau of Mines, was recently in San Francisco on a visit to the Coast offices of the Bureau.

Arthur Jenks, of the Kay Copper Corporation, recently examined the Babine Bonanza mine, Babine Range, in British Columbia.

R. L. Agassiz, of Boston, president of Calumet & Hecla Consolidated, is visiting the properties of the company in the Michigan district.

William W. Elmer is examining the Black Butte silver mine, in Lane County, Ore., for the owners, with a view to reopening that property.

J. H. Rodgers, of the New York & St. Louis Lead Co., recently examined a number of lead-zinc properties in the Omineca mining division of British Columbia.

W. Parsons Todd, president of the Quincy Mining Co., has returned to New York after a visit to the properties of the company in the Michigan copper district.

C. F. McGregor has been appointed mining recorder of the Port Arthur, Ont., district, in succession to **W. Morgan,** who has been superannuated after twenty years' service.

William Loeb, Jr., vice-president of the American Smelting & Refining Co., has returned to New York after visiting the plants of the company in the United States and Mexico.

Arthur Crowfoot, superintendent of the concentrating division of the Morenci Branch, Phelps Dodge Corporation, has returned to Morenci, Ariz., from a vacation spent in California.

George H. Garrey, who recently completed detailed geological examinations of the Piermont, McCoy Creek, North Star, and New York Mining properties near Ely, Nev., for the Ely Calumet Mining Corporation, and later went to Spokane, Wash., has returned to Salt Lake.

Colonel Allan C. Howard, vice-president of Minerals Separation, Ltd., of London, England, is making an inspection of the operations of Ontario Gold Veins, Ltd., which is working properties in Bernhardt and Bennett townships, in northern Ontario.

Dr. William O. Hotchkiss, chairman of the Wisconsin State Highway Commission, and engineer, geologist, and author, has accepted the presidency of the Michigan College of Mines, at Houghton, the position having been tendered him some weeks ago. He will assume his new duties before the opening of the fall term. Dr. Hotchkiss

Dr. W. O. Hotchkiss

succeeds the late Dr. F. W. McNair, who was killed in a railroad accident in Illinois a year ago. Dr. Hotchkiss was born at Eau Claire, Wis., Sept. 17, 1878. He received his degree of Bachelor of Science in engineering at the University of Wisconsin in 1903 and a Ph.D. degree in civil engineering in 1908. He was mining engineer for the Donora Mining Co., Duluth, Minn., in 1902, did exploration and geological work in Ontario, Canada, in 1903, was a consulting engineer at Madison, Wis., in 1904, and instructor in petrography and mineralogy at the University of Wisconsin from 1904 to 1907, made a state geological survey of Wisconsin from 1906 to 1908, and was state geologist in 1909. Dr. Hotchkiss started highway work in Wisconsin and succeeded in having the State Highway Commission formed. He is recognized as one of the leading highway engineers in America today, is a member of many of the foremost engineering and geological societies, and is the author of a number of books on the subject of highways, including "Rural Highways in Wisconsin" and "Limestone Road Materials of Wisconsin," and also of "Mineral Lands in Northern Wisconsin."

Dwight E. Woodbridge has been designated a member of a General Committee on City Planning for Duluth, Minn. The action was taken on the recommendation of American Engineering Council and approved by the board of directors of the Duluth Engineers' Club.

H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers, was given a luncheon by the Engineers' Club of San Francisco on his recent visit to the Pacific Coast. Dr. Bain briefly recounted his impressions of Argentine, gained upon a trip which he made to that country in the interest of the Argentine Government. He made an investigation of the possibilities of establishing an iron and steel industry in Argentina. Dr. Bain stated that a promising deposit of coking coal had been found, but that iron-ore deposits were lacking. He recommended the use of iron and steel scrap in initiating this industry.

Obituary

David M. Hyman, long interested in the silver-mining industry, died suddenly at Saratoga Springs, N. Y., on Sept. 16.

Joseph Trowbridge Bailey, a retired mining engineer, killed himself on Sept. 23, at his hotel in New York City. He was sixty-five years old, and had suffered from a nervous disorder for several years.

Leo S. Blackman, a mining engineer employed by the American Smelting & Refining Co., died in New Brunswick, N. J., on Sept. 19 from a self-inflicted pistol wound.

W. W. Webster, of the Minerals Separation company, is dead. Mr. Webster was associated with Mr. MacArthur in introducing to the Rand the MacArthur-Forrest cyanide process which created a revolution in the winning of gold in the Transvaal. He was a partner of the late John Ballot and a director of the Rhodesia Minerals Concession and the Rhodesia-Congo Border Concessions.

Eugene J. "Bud" Gorman, junior engineer at the Braden Copper Co. mines at Rancagua, near Santiago, Chile, died on Sept. 15 from injuries received in an accident at the company's plant. Mr. Gorman had been at Rancagua since last May, assuming his position immediately after his graduation from the School of Mines and Metallurgy of the University of Missouri, at Rolla. He was twenty-two years old.

James E. Walker, managing director of the Livingston Mines Corporation, died at Pocatello, Idaho, on Sept. 22. Burial was at Mackay, Idaho. Mr. Walker was manager of the company's properties on the East Fork of the Salmon River, Custer County, and had had active charge of the development and construction work for the last five years, prior to which he had been manager and superintendent of the Pittsburgh-Idaho mine, at Gilmore, Idaho, for many years. His early training was received in the copper mines at Butte, Mont., where he had long been highly regarded and where he leaves a host of friends.

Recent Technical Publications

Reviews, Abstracts, and References

European Metal Statistics

Statistische Zusammenstellungen über Aluminium, Blei, Kupfer, Nickel, Quecksilber, Silber, Zink und Zinn. Published by the Metallgesellschaft, Frankfurt am Main, Germany.

The twenty-sixth volume of the Metallgesellschaft report, containing the statistics of metal production, consumption, imports, exports, prices, and similar data for the principal countries of the world for 1924 and preceding years, was published in August. As we have mentioned before, the importance of this report, so far as American mining engineers and economists are concerned, is considerably less since the American Bureau of Metal Statistics began issuing a far more complete report in English, but it is a valuable reference work all the same. Last year *Mining Journal-Press* commented editorially on the decreasing importance of the European countries as miners and smelters of metal, as shown by these statistics. In 1924, however, Europe held her own very well. In mine production, that continent turned out 19 per cent of the world's lead, the same as in 1923; 6 per cent of the world's copper, compared with 7 per cent in 1923; 22 per cent of the world's zinc, compared with 21 per cent the year before; 1 per cent of the tin, unchanged; and 51 per cent of the aluminum, compared with only 43 per cent in 1923. Europe is thus becoming of relatively greater importance as an aluminum producer, the increased percentage being the same for both the mining and smelting of this metal. A slight increase is noted in the smelter production of all the non-ferrous metals, compared with other countries, and a more decided increase in the use of metal. Considered on a tonnage basis, Europe now smelts 25 per cent of the world's lead, copper, zinc, tin, and aluminum, and uses 45 per cent of the world's production. With comparatively low labor costs, it is of course to be expected that smelting can be done there economically, and as financial affairs are ironed out, Europe may be expected to use an increasing percentage of the world's metallic products. E. H. ROBIE.

Flotation—R. D. Nevett has a three-page article entitled "The P.S.N. Flotation Process," in the July 5 issue of *Chemical Engineering & Mining Review*, published in Melbourne, Australia. This process is patented by Messrs. Palmer, Seale, and Nevett, whence its name.

Russian Minerals—The *Russian Review* for July 15, which is published by the Russian Bureau of Information, Washington, D. C., contains a short article discussing American mineral concessions in the Soviet union.

Geology—Memoir No. 145 of the Dominion Geological Survey, Ottawa, Ontario, contains a 129-page paper on "The Palaeozoic Outlier of Lake Timiskaming, Ontario and Quebec," by G. S. Hume. Price 35c.

Ontario Mining Laws—William Batten McPherson, lawyer and mining engineer, of Toronto, has prepared a summary of the mining laws of the Province of Ontario. It contains 74 pages and is intended as a handbook for the use of those who are interested in mining development in Ontario, and who may require a general view of the legislation applicable thereto. It is not a legal text book. Mr. McPherson's address is 171 Yonge St., Toronto, Ontario, Canada.

Motor Headlights—Any work that will tend to eliminate the dangers of night driving by motorists deserves wide publicity, so we take pleasure in calling attention to U. S. Bureau of Standards Circular No. 276 "Motor-vehicle Headlighting," prepared by R. E. Carlson, price 20c., from the Superintendent of Documents, Washington, D. C. The requirements of good road lighting are discussed and the construction and operation of lamps explained, with suggestions for testing. The price of the book is considerably less than that of the tickets which are becoming more freely distributed for violations of the automobile headlight laws.

Patents

Roasting Furnace—No. 1,547,594. July 28, 1925. A. V. Leggo, Melbourne, Victoria, Australia. Design for a furnace having several independent superimposed roasting chambers, a combustion chamber, and an equalizing chamber, with means for conveying the ore.

Lead Refining—No. 1,548,852. Aug. 11, 1925. H. M. Schleicher, Roosevelt, and H. M. Burkey, Plainfield, N. J., assignors to American Metal Co., Ltd., New York City. A method of removing antimony, arsenic, tin, and similar metal impurities from lead, which consists in subjecting the lead, at a temperature considerably above its melting point, to an oxidizing gas in the presence of a molten material having a selective affinity for the impurities present. The molten material containing the impurities is then separated from the lead. Patent No. 1,548,853 is similar, with the addition that the reaction is accelerated by mixing an alkali metal with the molten lead.

Copper Smelting—No. 1,549,141. Aug. 11, 1925. A. G. McGregor, Warren, Ariz. Means for transferring hot calcine from a roasting furnace to a reverberatory smelting furnace by the use of a container having a heat non-conducting outer wall, a filling opening at the top and a discharge opening at the bottom. A transfer car is provided, with means for lifting and transporting the container.

Grinding Mill—No. 1,553,328. Sept. 15, 1925. Alexander J. Roubal, Milwaukee, Wis. Assignor to Allis-Chalmers Manufacturing Co., Milwaukee. A shell in combination with a trunnion and a laminated head comprising a number of coacting annular plates of progressively decreasing diameters.

Gyratory Crusher—No. 1,549,555. Aug. 11, 1925. O. E. Jorgensen, Forest Hills, N. Y., assignor to Allis-Chalmers Mfg. Co., Milwaukee. Design for a crusher of the gyratory type, the gyrations of the crusher head being actuated by a rotating pendulum running in an interior race.

No. 1,549,641. Aug. 11, 1925. W. S. Weston, Columbia, S. C., assignor to Weston & Brooker, Columbia. Design for a gyratory crusher.

Ore Treating—No. 1,549,856. Aug. 18, 1925. Frank N. Darrow, Jackson, Calif. Process for treating carbonaceous gold and silver ores during or after crushing with an oleaginous substance and also a soapy substance, and extracting the precious metals by cyanide.

Iron Ore—No. 1,552,786. Sept. 8, 1925. Ernest W. Westcott, Niagara Falls, N. Y., assignor to Kalmus, Comstock & Westcott, Boston, Mass. A cyclic process for recovering iron oxide from material containing it, by treating the oxide with chlorine under reducing conditions to produce ferric chloride, and treating the chloride in vapor form with air to re-form ferric oxide and chlorine, and returning the chloride to serve anew.

Gyratory—No. 1,553,202. Sept. 8, 1925. Edgar B. Symons, Los Angeles, Calif., assignors to Symons Bros. Co., Milwaukee, Wis. A detail of gyratory crusher design.

Disk Crusher—No. 1,553,203. Sept. 8, 1925. Edgar B. Symons, Los Angeles, Calif., assignors to Symons Bros. Co., Milwaukee, Wis. A spring-head adjustment for disk crushers.

Compressor—No. 1,553,323. Sept. 15, 1925. Albert F. Parks, South Norwalk, Conn. Assignor to the Norwalk Co., South Norwalk, Conn. A compressor valve.

Leaching—No. 1,553,413. Sept. 15, 1925. George D. Van Arsdale, Los Angeles, Calif. Assignor to Inspiration Consolidated Copper Co. In treating concentrates to obtain copper, a procedure comprising an initial leaching followed by a roasting and then by a further leaching.

Leaching—No. 1,553,414. Sept. 15, 1925. George D. Van Arsdale, Los Angeles, Calif. Assignor to Inspiration Consolidated Copper Co. A method of treating mixed copper ores involving dry crushing unroasted mixed ores to a size sufficient to permit access of solutions to the copper minerals and then leaching with an acid solution containing about $\frac{4}{10}$ to 1 per cent or more of ferric iron.

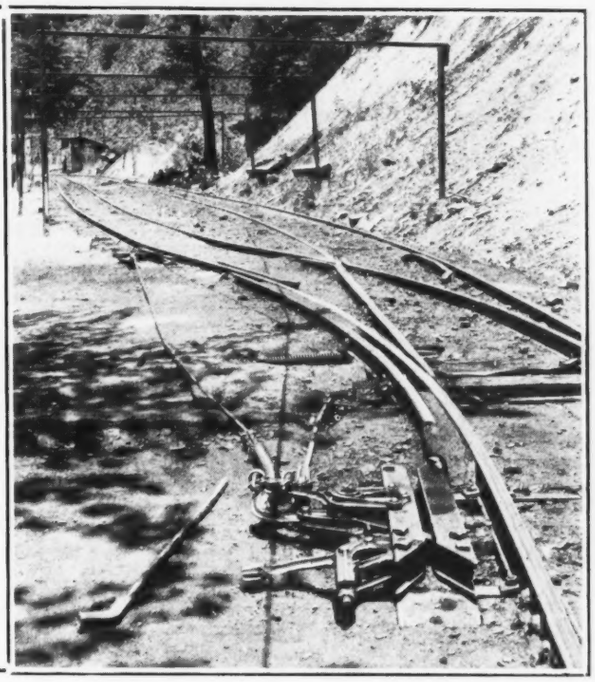
Leaching—No. 1,553,415. Sept. 15, 1925. George D. Van Arsdale, Los Angeles, Calif. Assignor to Inspiration Consolidated Copper Co. This covers the step which consists in applying heat and pressure to effect a precipitation of iron from an acid solution, involved in patent No. 1,553,414. An additional patent, No. 1,553,416, has been secured by Mr. Van Arsdale covering the combination process referred to in patents No. 1,553,413 and 1,553,414, and 1,553,415.

Electric Furnace—No. 1,554,002. Sept. 15, 1925. James H. Gray, New York. An electric furnace of the tilting type of certain design.

New Machinery and Inventions

Switch works automatically

When a loaded trip comes up on the right-hand track, the locomotive cuts off and proceeds forward through the switch, lowering a "traveler" bar into the slot in the switch thrower (foreground). This throws the switch-point so the motor can back into the by-pass track. When the "traveler" engages the tripping device beside the rail in the middle background, the switch is closed. The motor then runs around the trip and pushes it to the tipple.



Automatic Switch Thrower Lessens Risk in Dumping at the Tipple

In an effort to increase efficiency and lessen accident risk, a mining company in West Virginia has installed an automatic switch thrower at the turnout to a by-pass track on the main outside tram road leading to the tipple. By means of the thrower the motormen are able to control the movements of their locomotives over, into, or out of the switch, and in this respect the switch is made selective.

But it is in the changing of positions by the locomotives from the front to the rear end of a trip so as to simplify the movements in backing the cars to the tipple that this device serves its greatest usefulness in this installation. This shifting operation is performed by the motorman without any aid from the trip rider, who thus avoids the danger of jumping from a moving locomotive—a customary practice where a hand-operated switch is employed.

In the accompanying illustration are seen the essential details of the switch thrower. These are designated as the "tripping device" and the "switch thrower." In addition, bolted to one side of each tram locomotive is a lever mechanism called the "traveler."

A locomotive moving on the right-hand or main track on its way to the tipple with a trip of coal cuts loose from the cars in the clear of the frog, and alone crosses over the frog and switch. In doing so the traveler on the locomotive is depressed by the motorman to pass through the guides and engage a finger-like lever on the switch thrower which opens the switch behind the locomotive.

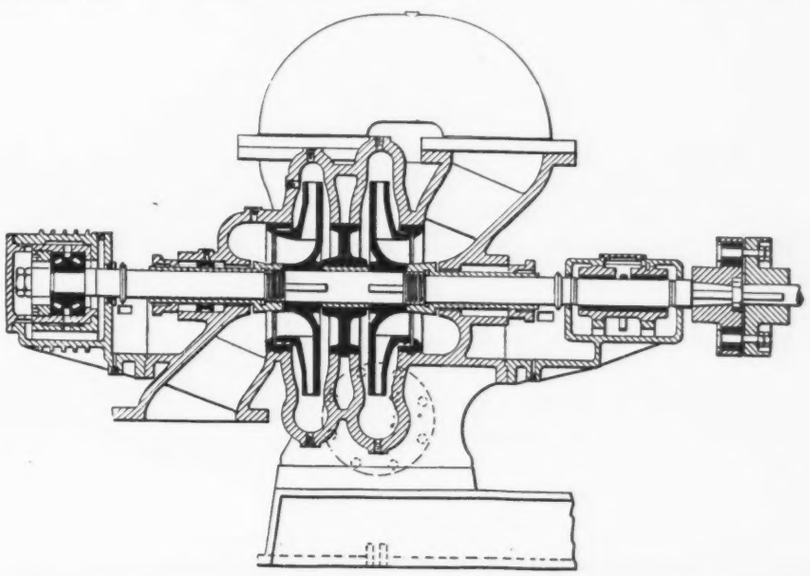
The locomotive being in the clear of the switch which is now open reverses its direction, passing through the switch and onto the by-pass track. A short distance beyond the frog on the by-pass track is the tripping device, which likewise is engaged by the depressed traveler, closing the switch. The locomotive continues in motion, passes the standing trip on the main track, goes through a spring latch at the far end of the by-pass track, and pulls up at the rear of the trip, which it then backs to the tipple.

Centrifugal Pump Using Roller Bearing on Suction End

Rollers are now being used, for the first time and with good results, in the bearing on the suction end of the casing of centrifugal pumps. Successful operation of this bearing is one of the principal difficulties where pumps of this type are used. In these pumps, regardless of the type of bearing, an end thrust must be taken care of. Various types of bearings other than rollers have been designed to take this end thrust, and although some have been successful, these types have, under certain conditions, given considerable trouble.

With pumps used for handling acidulous mine water the difficulty is usually magnified. Most of the bearings previously used have been cooled by water usually taken from one stage of the pump and conducted to a jacket around the bearing. With such a bearing an arrangement has to be made in the pipe connection between the pump and water jacket to prevent air from entering the casing, when the pump is being primed ready for operation. A ball check valve is often placed in the water line, but soon becomes corroded. Besides, the spillage of water around the water jacket is usually unsightly. Where the water contains much acid the waterfeed pipe in time corrodes or becomes blocked, even if the pipe is of brass.

To overcome these difficulties, the Goyne Pump Co., of Ashland, Pa., in developing its new line of centrifugal pumps, has incorporated in its pumping units an end-thrust bearing which has proved to be remarkably successful. It consists of a double Timken roller bearing arranged to take end thrusts in either direction. The accompanying figure shows an outline of a pump and how the bearing is mounted. Instead of being lubricated with grease, as is common with most bearings of this type, this bearing is lubricated with oil. The oil jacket is arranged so that there is practically no leakage.



Sketch of roller-bearing centrifugal pump, showing how bearing is mounted

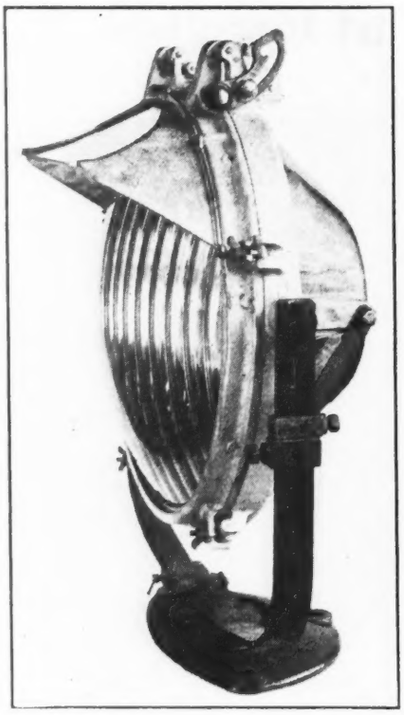
Something New in Floodlights

An important departure from conventional floodlight projector design is represented by the Pylo-National type No. 2375 projector. Ventilation has been entirely dispensed with, and the cast aluminum alloy case has an absolutely tight closure, with machined surfaces at the door joint and a soft lead packing ring. The principal causes of depreciation in reflective values, and of lamp failures, are eliminated, since dust, gases, moisture, and insects are entirely excluded from the interior of the unit.

Ventilation is unnecessary in this new design, for the sufficient radiating surface insures perfectly safe interior temperatures for the glass reflector and lamp when using 1,000 and 1,500-watt lamps.

The case is of cast aluminum alloy, with a drawn aluminum back, and fittings and small parts are of aluminum or bronze. The mounting base and trunnions are provided with locking devices, so that adjustment of the unit is not disturbed by the maintainer. Focusing is accomplished from the outside of the case.

Crystal glass reflectors 23 in. in diameter are used, and these, as well as the rectangular divergence lenses which are optional on this unit, are exclusive developments of the company.



Floodlight projector, 23-in. in diameter, equipped with rectangular divergence lens, and a visor

Special Cast Steel Now Used in Conveyor Claims

A new cast steel known as "Farrell's 85, special-purpose cast steel" is especially well adapted for use in conveyor chains. It is also being used to make chains for elevators and for power transmission. It is said to have shown high tensile strength and great resistance to wear and abrasion in numerous tests. Chains made from it can be used for heavy conveyors and for conveyors handling abrasive materials without breaking down and causing trouble, it is claimed.

The Stephens-Adamson Manufacturing Co., of Aurora, Ill., manufacturers of conveying and elevating machinery, have the sole rights for chains made from this special-purpose steel.

New Ball Mill Designed for Treating Nickel Slag

E. S. Tompkins, of 90 West St., New York, has recently been awarded a contract by the International Nickel Co. to design and furnish equipment for the new concentrating plant at the company's Huntington, W. Va., works. This plant will have a capacity for recovering 75 to 100 tons of metallic nickel per day from slags of electric and open-hearth furnaces.

A special ball mill designed by E. S. Tompkins will be used, which is manufactured by the Hadfield-Penfield Steel Co. Deister Plat-O tables will be used throughout and Wilfley sand pumps will handle the product from the mill as well as the table tailings, which will be pumped to low ground for filling.

The new plant will be ready for operation on or about Dec. 1.

Trade Catalogs

Steam Shovel—Bulletin No. 316 of the Marion Steam Shovel Co., Marion, Ohio, illustrates and describes the new Marion Model 125 steam and electric shovel. It will be sent on request.

Locomotives — A wide variety of quarry-haulage operations, as well as those in sand and gravel pits, is shown in the new bulletin just issued by the Heisler Locomotive Works, of Erie, Pa. In all of them the Heisler locomotive is shown hauling its regular train. The catalog contains 18 pages, including several tables of locomotive haulage capacities. A copy will be sent on request to any quarry man or gravel producer.

Compressor—Sullivan Machinery Co. is sending out its new Bulletin No. 77-N, dated July, 1925, describing the Sullivan portable air compressors WK-312, WK-314, WK-32, and WK-34. Two types of portable gasoline engine driven compressors are shown; likewise, a Fordson-operated type and one driven by electric motor.

Blower—The Diamond Power Specialty Corporation has reprinted a bulletin entitled "The Best Paying Investment in the Power Plant." It features Diamond "Valve-in-Head" blowers, and contains information and data for the power operator.

Transformers — The Kuhlman Electric Co., of Bay City, Mich., has published a handbook on the electrical transformer. It contains data and material for the electrical engineer.

Building Construction — The Austin Company, Cleveland, Ohio, has issued the eighth edition of the "Austin Book of Buildings." Among its features is a 10-page technical section covering descriptions, advantages, and relative costs of various types of floors, doors, walls, roof structures, wall facings, and roof waterproofings. Copies will be mailed to executives on request to the company.

Recording Instruments—The Brown Instrument Co., Philadelphia, Pa., has issued two new bulletins—namely, No. 44, describing its indicating and recording tachometers, containing 12 pages, and No. 74, covering its recording crusher and vacuum gages, which contains 32 pages.

Tool Steel—Joseph T. Ryerson & Co., Chicago, have issued an 80-page book entitled "Shop Handbook on Tool Steel." The author of the volume, G. Van Dyke, manager of the company's special steel department, has endeavored to treat this technical subject in a non-technical way, for the benefit of the purchasing agent, the superintendent, and the tool maker.

Diamond Drills—Catalog 80, containing 80 pages, has been issued by the Sullivan Machinery Co., Chicago, Ill. It describes the company's latest improved types of diamond drills.

Paint — Hill, Hubbell & Co., San Francisco, have issued a bulletin describing the uses and methods of applying its paints. It is entitled "Modern Practice in Tank Protection" and is written by R. H. Hubbell.

Draft Indicator — A four-page circular issued by the Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill., illustrates the construction and operation of that company's multiple draft indicator. It is intended to insure proper regulation of draft.

Planer—Cleveland open-side planers are covered in a four-page folder received from the Cleveland Planer Co., 3156 Superior Ave., N. E., Cleveland, Ohio.

Grease Gun—The Shere Metal Products Corporation, 329 Fifth Ave., New York, has issued a leaflet announcing a patented hydraulic grease gun capable of accepting a pressure, it is claimed, of 5,000 lb.

Temperature Control—Catalog No. 87 of the Brown Instrument Co., Philadelphia, Pa., contains 40 pages devoted to Brown automatic temperature-control instruments for indicating, recording, signalling, and alarm.

Tables—The Deister Machine Co., Fort Wayne, Ind., has recently brought out a new catalog on Deister ore-concentrating machinery. An effort has been made in preparing this catalog to make it as interesting as possible to engineers and millmen. It has been compiled as a treatise on the construction, theory, and principles of operation, as well as the actual operation of the machine. The equipment covered includes the Plat-O rougher, sand table and slime table, the cone baffle classifier, the Deister simplex concentrating tables, the multiple-deck tilting slimer, and coal-concentrating equipment. A copy will be sent on request.

Tramways—A. Leschen & Sons Rope Co., St. Louis, Mo., has issued an attractive 50-page catalog describing the Leschen systems of aërial tramways. One section is devoted to wire ropes for tramways.

The Market Report

Metal Prices Steady in Quiet Market

Lead Practically Constant Throughout September—Copper Slightly Weaker and Tin Stronger in Last Few Days

New York, Sept. 30, 1925—No price changes of importance have marked the non-ferrous metal market in the week ending today. Copper has weakened slightly, though the large producers have marketed moderate tonnages throughout the week at last Wednesday's price of 14½c. delivered. Tin touched 60c. a lb. this afternoon, being aided by bullish operations in London. Zinc weakened slightly during the week, but is back again to 7⅞c. as a result of export inquiry. Lead has held steady in the New York market at the present level for six weeks, and there seems no particular reason to expect an early change either up or down.

The dormant condition of the European metal market, which has been in evidence now for several weeks, has prevented any advance in metal prices and has brought about a slight recession in copper. Two reasons are assigned. One is that buying early in the summer was exceptionally heavy and that a quiet period in August and September was to be expected. A second, and perhaps more important one, is that efforts have been made to have things look as black in Europe as possible pending the outcome of the French debt conference in Washington, so that as good terms as possible could be arranged. At any rate, some of the large metal producers here, principally the copper producers, are content to sit back and watch the market a few days longer until some settlement is announced at Washington, at which time they hope renewed interest will be shown abroad, followed by another buying movement here.

Daily Prices of Metals

Sept.	Copper N. Y. net refinery*	Tin		Lead		Zinc
	Electrolytic	99 Per Cent	Straits	N.Y.	St. L.	St. L.
24	14.15@14.25	57.125	58.75	9.50	9.25	7.85@7.875
25	14.125@14.25	57.00	58.50	9.50	9.30	7.85@7.875
26	14.125@14.25	57.00	58.25@58.50	9.50	9.30	7 85
28	14.125@14 25	57.25	58.75-58.875	9.50@9.60	9.25	7.80@7.85
29	14.10@14.25	57.25	59.25	9.50	9.25@9.40	7.8 @7.85
30	14.10@14.25	57.875	59.875	9.50	9.25	7.85@7.875
Av.	14.185	57.250	58.927	9.508	9.279	7.848

*The prices correspond to the following quotations for copper delivered: Sept. 24th, 14.40@14.50c.; 25th, 26th, 28th, 14.375@14.50c.; 29th and 30th, 14.35@14.50c.

The above quotations are our appraisal of the average of the major markets based generally on sales as made and reported by producers and agencies, and represent to the best of our judgment the prevailing values of the metals for deliveries constituting the major markets, reduced to the basis of New York cash, except where St. Louis is the normal basing point, or as otherwise noted. All prices are in cents per pound. Copper is commonly sold "delivered," which means that the seller pays the freight from the refinery to the buyer's destination.

Quotations for copper are for ordinary forms of wire bars, ingot bars and cakes. For ingots an extra of 0.05c. per lb. is charged and there are other extras for other shapes. Cathodes are sold at a discount of 0.125c. per lb.

Quotations for zinc are for ordinary Prime Western brands. Quotations for lead reflect prices obtained for common lead, and do not include grades on which a premium is asked.

The quotations are arrived at by a committee consisting of the market editors of *Mining Journal-Press* and a special representative of the Bureau of Mines and the Bureau of Foreign and Domestic Commerce.

London

Sept.	Copper			Tin		Lead		Zinc	
	Standard		Electrolytic						
	Spot	3M		Spot	3M	Spot	3M	Spot	3M
24	61 3/8	62 1/8	67 1/8	264 1/2	264 1/2	39 1/8	36 3/8	38 5/8	37 5/16
25	61 1/8	62 1/8	67 1/4	263 3/8	263 1/2	39 1/2	36 3/8	38 9/16	37 1/4
28	61 1/8	62 1/8	67	264 1/2	264 3/4	39 3/8	36 7/16	38 5/16	37 5/16
29	61 1/4	62 1/8	66 3/4	264 7/8	265 3/8	39 1/4	36 3/8	38 3/4	37 3/16
30	61 1/8	62	66 1/2	268 1/2	267	39 3/8	36 7/8	38 5/8	37 7/16

The above table gives the closing quotations on the London Metal Exchange. All prices in pounds sterling per ton of 2,240 lb.

Silver, Gold, and Sterling Exchange

Sept.	Sterling Exchange "Checks"	Silver		Gold London	Sept.	Sterling Exchange "Checks"	Silver		Gold London
		New York	London				New York	London	
24	4.84 1/8	71 3/8	32 15/16	84s11½d	28	4.84	71 1/4	32 7/8	84s11½d
25	4.84 1/8	71 1/4	32 15/16	84s11½d	29	4.84	70 7/8	32 3/8	84s11½d
26	4.84	71 1/2	33 1/8	...	30	4.83 7/8	71	32 13/16	84s11½d

New York quotations are as reported by Handy & Harman and are in cents per troy ounce of bar silver, 999 fine. London silver quotations are in pence per troy ounce of sterling silver, 925 fine. Sterling quotations represent the demand market in the forenoon. Cables command three-eighths cent premium.

Average Metal Prices for September, 1925

Copper:	
New York Electrolytic	14.376
London Standard	61.886
London Electrolytic	67.693
Lead:	
New York	9.508
St. Louis	9.303
London	38.884
Silver:	
New York	71.570
London	32.983
Sterling Exchange	484.270
Zinc:	
St. Louis	7.753
London	37.435
London Forward	36.719
Tin:	
99 per cent	56.405
Straits	58.247
London	259.182
Quicksilver	81.730
Antimony	17.143
Platinum:	
Refined	120.000
Crude	113.710
Aluminum, 98 per cent	27.000

Copper Now Around 14⅜c., Delivered

Various prices have been obtained for the copper sold in the week ending today. Until yesterday, 14½c., delivered, was generally realized by the large producers for such lots as they sold, for delivery over the next three months, but no one seller was able to market a very large tonnage at that level. More active selling was done at concessions, and in the last two days particularly the large producers have found it difficult to attract buyers without cutting prices. Consumers today would not have much trouble in getting copper for 14½c. delivered to the higher freight rate points, or 14⅜c. near by and Connecticut Valley, especially for October-November shipment. December and

first-quarter copper is a little higher. It might be possible to pick up small tonnages of spot copper at 14.30c. The volume of sales has been approximately the same as last week, and less than normal. The business has been better distributed, however, among the various selling agencies.

Most manufacturers of copper and brass are decidedly optimistic over prospects for a good fall business. Orders during September have probably not been quite so good as the phenomenal business placed in August, but certainly no complaint is heard from the sheet copper and brass mills. The demand for wire is, however, perceptibly less.

Export inquiry has not amounted to much, most agencies having sold only a few hundred tons during the week. Prices have been reduced by the principal selling agencies of American producers to 14.65c., but even at that level dealers and the Katanga company were reported to be offering down to 10 points lower, so that at least one of the large American agencies came to 14.50c. today. Practically all Katanga copper is now sold abroad, and is an upsetting influence. Much of it, not electrolytically refined, is very impure; it is hardly fit for any use unless refined, and contains such deleterious impurities that American refineries do not like to treat it. This copper, according to reports, makes up much of the increase in stocks of standard and is more likely to act as a football for trading interests in the London market rather than to find an early outlet in consumptive channels.

Steadiness Marks Lead Market

The American Smelting & Refining Co. continues its official contract price for New York lead at 9.50c. The leading interest in the Middle West is selling at 9.25c. to some of its regular customers, but coincidently is making large sales at the average quotation. Some October metal is bringing a premium, and good-sized orders for spot shipment were placed at 9.40c. on Tuesday of this week. In the New York market 9.60c. has been realized on fair-sized shipments for October, but these are not large compared with the volume of business at the contract price.

Indications are that there will be some increase in current smelter output, as the plant at Kellogg, Idaho, is running two furnaces regularly, and repairs to the Herculaneum plant in Missouri recently have been completed. However, deliveries are certain to be good and no surplus metal is likely to accumulate. At the moment demand in the Middle West is more brisk than on the Eastern seaboard. Current sales are mostly for October, but some business is being done for November and a very little as far ahead as December. It is unlikely that any domestic lead will go abroad in the near future, but, on the other hand, producers do not look for a situation where foreign ore lead can be profitably marketed on this side of the Atlantic.

Corroders appear to be more actively in the market than other users, but cable makers and manufacturers of "blue" lead products are likewise regular buyers. The situation is steady.

Asking 7⅞c. for Zinc Today

Demand for zinc from galvanizers has been of fair proportions all week. A slight recession, probably responding to the London influence, brought out a little of the metal from small producers and resellers at 7.80c. two or three days ago, but in the last day or two export inquiry has improved, and the price is back at the level of a week ago, 7.85@7.875c. Most of the sales have been for prompt or October shipment, and the indications are that consumers, with only one or two exceptions, have provided only for their current requirements. Most producers are well sold up, so that fundamentally conditions are exceedingly good from the producers' standpoint. Brass Special grade is scarce, and premiums of 12½ to 15 points over Prime Western grade are generally asked. High-grade continues at 9¼c. delivered. New York prices of Prime Western are still at the freight differential of 35c. per 100 lb. above St. Louis.

Tin Reaches 60c.

Decided strength in the tin market has developed since Monday of this week. Today the market opened at 59.50c., but rapidly rose to 60c., at which sales were made. Domestic deliveries for September totalled 6,360 tons, and it is believed that British warehouse stocks will show a definite decline. Inquiry in this market, following a period of dullness, has improved noticeably. Several cargoes that have recently been unloading in New York have had the effect of removing the premium on spot metal in the last few days, the quotations for Monday and Tuesday being identical for all positions. It is anticipated, however, that spot will soon re-establish its advantage. The contango on standard tin in London was eliminated a week ago, but today spot is quoted at £268½, against £267 for forward metal. These changes are reflected in the New York market.

Silver Quiet

Silver continues quiet and inactive, with India still showing some disposition to buy. London reports China on both sides of the market.

Mexican Dollars: Sept. 24th, 54⅝c.; Sept. 25th, 54¾c.; Sept. 26th, 55c.; Sept. 28th, 54⅝c.; Sept. 29th, 54⅝c.; Sept. 30th, 54½c.

Francs Hold Firm

French francs made a small net gain during last week, whereas Italian lire registered a fractional decline. Closing cable quotations of the principal foreign exchanges on Tuesday, Sept. 22, were as follows: francs, 4.73¼c.; lire, 4.07½c.; and German marks, 23.81c. Canadian dollars continue at par.

Steel Steady—Pig Iron Quiet—Coke Dull

Pittsburgh, Sept. 29, 1925

The heavy shipments of the steel mills in the last thirty days do not seem to have made any inroads upon order books, as new buying has been active at the same time. There are no distinct trends at present, either upward or downward, in the volume of buying or the volume of production and shipments. The trade is steady, at a relatively high stage. Production is at 20 to 25 per cent above the average since the war, and at only about 15 per cent below the peak rate attained for short periods three times since the war, early in 1923, 1924, and the present year.

Finished-steel prices have shown no distinct change for more than a month. Business has lately been so good in bars and shapes, and plate prices have been so low relative to these two lines, that producers now have some hopes of the market stiffening in the three products.

Pig Iron—Prices easily maintained at the recent 50c. advance: Bessemer, $19.50; basic, $18.50; foundry, $19, f.o.b. Valley furnaces.

Connellsville Coke—The market remains dull. Spot is $3.50@$3.75 for furnace and $4@$4.50 for foundry coke. An active demand would promptly bring higher prices.

Zinc Blende Held for Advance—Lead Ore Unchanged

Joplin, Mo., Sept. 26, 1925

Zinc Blende	Per Ton
High	$58.85
Premium, basis 60 per cent zinc	$56.00@$57.00
Prime Western, 60 per cent zinc	$55.00
Fines and slimes, 60 per cent zinc	$54.00@$51.00
Average settling price, all	$53.96

Lead Ore	
High	$132.43
Basis 80 per cent lead	$115.00
Average settling price, all	$125.75

Shipments for the week: Blende, 20,006 tons; lead, 1,506 tons. Value, all ores the week, $1,266,720.

Shipment for nine months: Blende, 616,804; calamine, 579; lead, 94,252 tons. Value, all ores nine months, $41,813,540.

With sellers holding for higher lead prices, and practically all ore bought in August, on $120 to $130 basis, having been shipped, a sharp decline in lead shipment is shown this week.

Approximately 13,000 tons of zinc blende was purchased today for future delivery. It is estimated that 5,000 tons are sold ahead of production. There is less than 5,000 tons of unsold zinc blende in the bins tonight, and sellers, having little to sell, are awaiting an advance in price offerings.

Platteville, Wis., Sept. 26, 1925

Zinc Blende	Per Ton
Blende, basis 60 per cent zinc	$57.25

Lead Ore	
Lead, basis 80 per cent lead	$115.00

Shipments for the week: Blende, 921 tons; lead, 60 tons. Shipments for the year: Blende, 35,160; lead, 1,681 tons. Shipments for the week to separating plants, 1,731 tons blende.

Other Metals

Quotations cover large wholesale lots, f.o.b. New York, unless otherwise specified.

Aluminum—99 per cent, 28c. per lb.; 98 per cent, 27c. London, 98 per cent, £118 long ton. Domestic market firm, with good demand. Slow in Great Britain.

Antimony—Per lb.: Chinese brands, spot, 17¼c.; October, 17@17¼c. Cookson's "C" grade, 19§@20c.

Chinese needle, lump, nominal, 14@15c. Standard powdered needle, 200 mesh, nominal, 17@19c. White oxide, Chinese, 99 per cent Sb_2O_3, 16@19c.

Demand moderate but scant arrivals keep price firm.

Bismuth—$2.65@$2.70 per lb. in ton lots. London, 10s.

Cadmium — 60c. per lb. London, 2s. 3d.

Cobalt—Shot, 97@98 per cent, $2.50 per lb. Black oxide, 70 per cent, $2.10; gray oxide, 75 per cent, $2.35. London, 10s. for metal; 8s. for black oxide; 8s. 10d. for gray. Market fair.

[1]**Germanium Oxide**—25 to 50 gm. lots, $6 per gm.

Iridium—$400 per oz. for 98@99 per cent. Nominal. London, £80.

[1]**Lithium**—95@96 per cent grade in 1 to 5 lb. lots, $65 per lb.

Magnesium — Ingot, 99.85 per cent, $1 per lb. in 1,000-lb. lots. Market firm. London, 3s. 9d.@4s. 3d. for 99 per cent ingots or sticks.

[1]**Molybdenum**—99 per cent, $25 per kg.

Monel Metal — Base price for shot, 32c. per lb.

Nickel—Ingot, 33@34c.; shot, 34@35c.; electrolytic, 38c. (99.75 per cent grade). Market fair. London, £170@£175 per long ton.

Osmiridium—Crude, $65 per oz.

Osmium—$110@$115 per oz.

Palladium—$78@$83 per oz. Crude $65 per oz. London, £16, nominal.

Platinum — Refined, $120 per oz. officially quoted. Sales also at $115@$118. Crude, $113.50@$114.

London, £25 per oz. for refined, and £23 for crude.

Quicksilver—Per 75-lb. flask, $81.50@$82.50. San Francisco wires $81.17. London, £13 10s.

Radium—$70 per mg. radium content.

Rhodium—$100@$105 per oz.

Ruthenium—$98@$100 per oz.

[1]**Selenium**—Black powdered, amorphous, 99.5 per cent pure, $2.15 per lb. in ton lots.

[1]**Tantalum**—Metal sheets, $275 per lb.

Tellurium—$2 per lb.

[1]**Thallium Metal**—Ingot, 99 per cent pure, $6 per lb. in 25-lb. lots.

Tungsten Metal — Powder, 97 to 98 per cent, $1.20 per lb. contained tungsten.

[1]**Zirconium Metal**—98 per cent grade, per lb., $30, in 5 to 10 lb. lots.

Metallic Ores

Chrome Ore—Crude, 45 to 50 per cent Cr_2O_3, $20.50@$23.50 per net ton, f.o.b. shipping point. Demand good. Ground, in bags, $29.

New Caledonian, 52-54 per cent Cr_2O_3, $24; nominal.

Situation unchanged.

[1]**Galena Radio Crystals**—Best quality (50 per cent of sized fragments good) 50c. per lb. in 500-lb. lots, f.o.b. Philadelphia.

Iron Ore—Lake Superior ores, per long ton, lower Lake ports:

Mesabi, non-bessemer, 51½ per cent iron, $4.25. Old Range, $4.40.

Mesabi, bessemer, 55 per cent iron, $4.40. Old Range bessemer, 51½ per cent, $4.55.

High-phosphorus foundry, over 0.18 per cent P, $4.15.

Eastern ores, cents per unit delivered at furnaces: Foundry and basic, 53 to 63 per cent, 9@10c.

Foreign ores, f.o.b. cars Atlantic ports, cents per unit:

Swedish and Norwegian, low-phosphorus, 68 per cent, 11@11½c.

Spanish and Algerian, low-phosphorus, 52@54 per cent, 9@10c.

Spanish foundry or basic, 50@54 per cent, 8½@9c.

Swedish foundry or basic, 66@68 per cent, 9@10c.

Manganese Ore—Per long ton unit of Mn, c.i.f. North Atlantic ports: Brazilian, 42@44c., nominal; Indian, 44c., nominal; Caucasian (unwashed), 42c.; Caucasian (washed), 44c.; Domestic consumers appear to have requirements for current year provided for. Foreign demand also off, but prices fairly well maintained.

Chemical grades[1], powdered, coarse or fine, 82@87 per cent MnO_2, Brazilian and Cuban, $70@$80 per ton in carloads.

Molybdenum Ore—65@70c. per lb. of MoS_2 for 85 per cent MoS_2 concentrates, f.o.b. mines. Market firm.

[1]**Pyrite Radio Crystals**—50c.@$1 per lb.

Tantalum Ore—Foreign, 75c. per lb. of Ta_2O_5 contained, c.i.f. New York.

Tungsten Ore—Per unit of WO_3, N.Y.: Wolframite, ordinary, $11.50@$12; high-grade, $12.25.

Scheelite, ordinary, $11.75; high-grade, $12@$12.50.

Prices very firm, though market remains quiet. Spot wolframite has been in active demand in London.

Vanadium Ore—Minimum 18 per cent V_2O_5, $1@$1.25 per lb. V_2O_5. Nominal.

Non-Metallic Minerals

Prices received for non-metallic minerals vary widely and depend upon the physical and chemical characteristics of the commodity. Hence the following quotations can only serve as a general guide to the prices obtained by producers and dealers in different parts of the United States for their own product. In the last analysis the value of a particular non-metallic mineral can only be ascertained by direct negotiation between buyer and seller.

[1]**Amblygonite**—8@9 per cent lithium oxide, $50@$60 per ton, f.o.b. mines.

Andalusite—Sorted, $40@$50 per ton, f.o.b. *South Dakota* mines. Sales mostly for experimental lots.

Asbestos: F.o.b. *Quebec* mines, tax and bags included, per ton:

Crude No. 1, $400@$450; crude No. 2, $250@$300; spinning fibers, $110@$175; magnesia and compressed sheet fibers, $75@$110; shingle stock, $50@$75; paper stock, $35@$45; paper fillers, $20@$30; cement stock, $8@$12; floats, $8@$12; sand, $6@$8.

The market is good and prices are firm, owing to building activity in United States. Proposed merger in Canada is again being seriously considered, but no agreement has been reached.

No. 1 Rhodesian crude, $310; No. 2, $250 per ton, c.i.f. New York.

Barytes—F.o.b. mines, per ton, bags extra:

South Carolina: Crude, $7@$8 per gross ton; ground, off color, $14@$17 per short ton.

North Carolina: White bleached, $22 per short ton; white natural, $20.

Georgia: Crude, unground, but washed, lumps and fines, $7.50@$8.50.

Missouri: Crude, $8.50.

St. Louis: Water ground and floated, bleached, $23@$24, f.o.b. works.

Canada: 94@96 per cent $BaSO_4$, $9 per net ton, f.o.b. mine.

Demand steady for spot and good shipments against contracts.

Bauxite — American, f.o.b. shipping point per gross ton: Crushed and dried, $5.50@$8.50; pulverized and dried, $14; calcined, crushed, $19@$20.

Foreign, per metric ton, c.i.f.: Dalmatian, low SiO_2. $5@$6.50; Istrian, $5.50@$6.50.

Dutch Guiana bauxite offered at $8.50 per long ton, c.i.f. *New York.*

Beryl—$70 per ton, hand-sorted crystals, 14 per cent BeO, in ton lots f.o.b. *Vermont.* Western beryl, of inferior quality, offered at $45@$60 per ton. Largely nominal.

Borax—Carload lots, in bags, per lb.: crystals, 5c.; granulated or powdered, 4¾c.

[1]**Celestite**—90 per cent $SrSO_4$, finely powdered, $30 per ton in carload lots.

Chalk—Precipitated, f.o.b. *New York*, per lb.: heavy, 3½@4c.; light, 3¾@4¼c.; extra light, 4@4½c.

Crude, in bulk, $4.75@$5 per ton.

China Clay (Kaolin)—F.o.b. *Virginia* mines, per ton: crude, lump, No. 1, $7; crude No. 2, $5.50; washed, $8; powdered, $10@$20; powdered (Blue Ridge), $10@$14.

Imported English, f.o.b. American ports: Lump, $12@$19; powdered, $45@$50.

1A grades, domestic, $16@$18, f.o.b. *Delaware* plants. Market slow.

Diatomaceous Earth—Per short ton, f.o.b. plant, *California:*

Kiln-fired brick, $65; kiln-fired aggregate, ¼ in., $45; insulating powder, $30; natural aggregate, ¼ in., $20; air-floated powder, $40; "Calatom" (mill run), $20; "Calatom," 3b, $30.

Emery — F.o.b. *Pennsylvania* and *New York* in 350-lb. kegs, per lb.: Greek Naxos, 6½c.; Turkish, 6½c.; Khasia, 5½c.; domestic, 3½c. Market good.

Feldspar — F.o.b. mine or grinding plant:

North Carolina: No. 1 pottery grade, $5.50@$6.50, depending upon quality. Market dull.

New Hampshire: No. 1, not over 10 per cent SiO_2, $8 per short ton. Ground, $17. Market fair.

New York: Per ton, f.o.b. cars, No. 1 crude, $8. Market good.

Maine: No. 1, ground, $19 per ton.

Tennessee: Pottery grades, $16@$21 per ton according to analysis and mesh; tile grades, No. 2 ground, $14@$16.

Maryland: Enamelers' grade, No. 1, $16; Glassmaker's grade, No. 1, $15; No. 2, $11.50.

Canada, f.o.b. mine: High potash, $9, f.o.b. per ton Quebec; crude, No. 1, over 12½ per cent potash, less than 5 per cent SiO_2, $7.50@$8; crude, No. 2, 20 to 25 per cent SiO_2, $5@$5.50.

Ground, No. 1, 180 mesh, $21 per ton, bags included; No. 2, 180 mesh, $15.

Fluorspar—F.o.b. *Kentucky* and *Illinois* mines, per ton:

Gravel, not less than 85 per cent CaF_2, and not over 5 per cent SiO_2, $15@$18. Foundry lump, 85-5, $19@$21. Ground, 95 to 98 per cent CaF_2

[1]Price furnished by Foote Mineral Co., Philadelphia.

and not over 2½ per cent SiO_2, $32.50. In bags $4 per ton extra. Volume of sales small, but prices firm.

Canada, 84@86 per cent CaF_2, less than 5 per cent silica, $16.

Fuller's Earth—Per ton, f.o.b. *Midway, Fla.:* 16 to 30 mesh, $16.50; 30 to 60 mesh, $18; 60 to 100 mesh, $15; 100 mesh "up," $8; 200 mesh "up," $15. Market fair.

Powdered, imported, duty paid, $23@$25 per ton.

Garnet—Per ton f.o.b. mines:

Domestic, $85; *Canadian*, $70@$80.

Spanish grades, $60, c.i.f. port of entry.

Gilsonite—Per ton, carload lots, f.o.b. mines *Colorado:*

Jet asphaltum, $36; selects, $33; seconds (ordinary grades), $25.50; peerless black, $32.90. Market good.

Graphite—F.o.b. New York per lb.:

Ceylon lump, 8½@9c.; chip, 7@7½c.; dust, 4@5c.

Flake, 15@30c. according to grade; fine ground, crystalline, 5c.@25c.; facings, 4@8c.

War surplus seems to be gone and prices expected not to go lower.

Greensand—Per ton, f.o.b. cars, *New Jersey:* screened and bagged, $25 in carload lots.

Gypsum—Per ton f.o.b. mill, depending upon location: crushed, $2.75@$3; ground, $4@$6; agricultural, $6@$7; calcined, $8@$11.

Ilmenite—Concentrates, 52 per cent TiO_2, 1½c. per lb., f.o.b. *Virginia* points. $60 per short ton, *Florida* mines.

Iron Oxide (See Ocher)—Standard Spanish red, 2½@3c. per lb.; domestic earth, 1¾@4½c.

Kaolin—See China Clay.

[1]**Lepidolite**—$20@$30 per ton for ordinary grades. Nominal.

Limestone—F.o.b. shipping points, depending on location: crushed, ¼ in. and less, 90c.@$2; 3 in. and larger, 90c.@$1.50.

Agricultural, 60c.@$5 for pulverized, depending upon source, purity, and fineness.

Magnesite—Per short ton, f.o.b. *California* mines: Grade "A," $40; Grade "B," $38.

Dead-burned, $40, f.o.b. Eastern seaboard. Market unsettled.

Manjak—Barbados, in 10-ton lots, c.i.f. New York: grade "A," 6c. per lb.; grade "AA," fine, 8c.

Mica—F.o.b. plant, per ton:

North Carolina: Scrap, $30; dry ground, roofing, 20 mesh, $35; dry ground, 100 mesh, $65. Market improving.

Sheet, per lb., No. 1 and No. 2: Punch, 1¼ in., 5@8c.

2 x 2 in., 25c.	3 x 4 in., $1.60
2 x 3 in., 60c.	3 x 5 in., $2.00
3 x 3 in., $1.00	4 x 6 in., $2.40

New Hampshire:

Mine run, $350; clean shop scrap, $25; mine scrap, $20.

White, dry ground, 20 mesh, $30; 40 mesh, $45; 60 mesh, $60; 100 mesh, $75; 200 mesh, $85. Market fair to good.

Madagascar, amber, dark, free from iron, per lb., f.o.b. *New York*, duty paid: special grade, $3.15; other grades $0.45 to $2.70.

Fair demand.

[1]**Monazite**—Minimum 6 per cent ThO_2, $120 per ton.

Ocher—F.o.b. *Georgia* mines, per ton: $22.50@$25 in sacks; $25@$30 in barrels; washed and water floated, $25@$28. Market fair to good.

Phosphate—Per long ton, f.a.s. or f.o.b. mines:

Florida, pebble, f.a.s., for export: 76@77 per cent, $5.90; 75 per cent, $5.40; 74@75 per cent, $5.15; 70 per cent, $3.40; 68 per cent, $3.25. Market firm.

Tennessee f.o.b.: 72 per cent, B. P. L., $4.50@$5; 75 per cent, $6@$6.50.

Potash—	Bags	Bulk
Muriate of potash 80@85 per cent, basis 80 per cent	$34.90	$33.65
Sulphate of potash 90@95 per cent, basis 90 per cent	45.85	44.60
Sulphate of potash-magnesia 48@53 per cent, basis 48 per cent	26.35	25.10
Manure salt 30 per cent	20.00	18.00
Manure salt 20 per cent	13.35	11.35
Kainit 14@16 per cent	10.50	8.50
Kainit 12.4 per cent	10.00	8.00

Two thousand pounds net weight, c.i.f. Atlantic and Gulf ports. German weights, tares and analyses.

Discounts: 5 per cent on minimum of 50 tons K_2O; 6 per cent on 100 tons; 7 per cent on 300 tons; 10 per cent on 500 tons.

Increased prices go into effect Oct. 1 on both German and French potashes.

Pumice Stone—In barrels, per lb. powdered, 3@5c; lumps, 6@8c.; lumps in bags, 4@6c.

Pyrites—Tharsis, per long ton unit of sulphur, c.i.f. U. S. ports: furnace size, 13c.

Cinder from ore to remain property of buyers. Market weak.

[1]**Quartz Rock Crystals**—Colorless, clear and flawed, pieces ¼ to ½ lb. in weight, 40c. per lb. in ton lots. For optical purposes, double above prices

Rutile—*Virginia*, per lb.; granular, 94@96 per cent TiO_2, 12@15c.; pulverized, 100 mesh, 94@96 per cent, 17@30c.

Florida 93 per cent TiO_2, $200 per ton.

Silica—Water ground and floated, per ton, f.o.b. *Illinois:* 400 mesh, $31; 325 mesh, $26; 250 mesh, $19.

Glass sand, $1@$5 per ton; brick and molding sand, 30c.@$2. Fair.

[1]**Spodumene**—$20@$30 per ton, depending upon lithium content. Nominal.

Sulphur—$15@$16 per ton for domestic, f.o.b. *Texas* mines; $19 for export, f.a.s. *New York.*

Talc—Per ton, carload lots, f.o.b. works, containers included:

Vermont: 200 mesh, extra white, $11@$12; 180 mesh, medium white, $10.50@$11.50; 160 mesh, medium white, $10@$11. If packed in burlap bags, $1 per ton less, plus 15c. each for bags.

Prices firm but demand rather quiet.

New York: Double air-floated, 200 mesh, $13.75; 325 mesh, $14.75. Demand fair.

Georgia: Powdered, gray, $7.50@$10; yellow, $9@$12; red, $11@$13; white, $10@$15; airfloated, $15@$25; roofing, $7.50@$9. Market fair to good.

New Jersey: Soapstone, ground, $10.50@$12; serpentine for granite and stucco, $16@$20. Market fairly good.

Tripoli—Per short ton, burlap bags, paper liners, minimum carload 30 tons, f.o.b. *Missouri*: Once ground through 40 mesh: rose and cream colored, $20; white, $18@$27. Double ground through 110 mesh: rose and cream, $17@$25; white, $19@$30. Air-float through 200 mesh: rose and cream, $35@$40; white, $40.

Seasonal stimulation in demand has already started.

[1]**Zircon**—Freight allowed east of Mississippi River:

99 per cent, 3c. per lb., f.o.b. *Florida*, in carload lots.

[1]Price furnished by Foote Mineral Co., Philadelphia.

Mineral Products

Arsenious Oxide (white arsenic)—3.50c. per lb. delivered. A few carloads sold.

Copper Sulphate—4.50@4.60c. per lb.

Sodium Nitrate—Spot, $2.50 per 100 lb., ex vessel Atlantic ports.

Sodium Sulphate—80c.@$1.30 per 100 lb., f.o.b. works.

Zinc Oxide—Per lb. in bags:

Lead free, 7¼c.

Leaded grades, 7c.

French, 9¾@12c.

Ferro-Alloys

[1]**Ferrocerium**—$7 per lb.

Ferrochrome—0.1 per cent carbon, 35c. per lb. of contained chromium; 2 per cent carbon, 23c. per lb.; 4 to 8 per cent carbon, 11@11½c. per lb.

Ferromanganese—Domestic and foreign, 78@82 per cent, $115 per gross ton. Spiegeleisen, 19@21 per cent, $32@$33 f.o.b. furnace; 16@19 per cent, $31.

Ferrophosphorus—Electrolytic, 18 per cent P, $91 per ton; 24 per cent, $122.50; f.o.b. Ala. and Tenn.

Ferrosilicon—14 to 16 per cent, $45 per gross ton, f.o.b. works; 50 per cent, $85 delivered; 75 per cent $150. Market active.

Ferrotitanium—For 15 to 18 per cent material, $200 per ton, f.o.b. Niagara Falls, N. Y.

Ferrotungsten—$1.05@$1.12 per lb. of contained W, f.o.b. works, according to grade.

[1]**Ferro-uranium**—30 to 40 per cent U, $4.50 per lb. of U contained, f.o.b. works in 500-lb. lots.

Ferrovanadium—Per lb. of V contained, f.o.b. works, $3.25@$4.

Metal Products

Rolled Copper—Sheets, 22¾c.; wire, 16½c.

Lead Sheets—Rolled, 13¼c., clipped, 13½c.

Nickel Silver—29¼c. per lb. for 18 per cent nickel Grade A sheets.

Yellow (Muntz) Metal—Dimension sheets, 20¼c. per lb.; rods, 17¼c. per lb.

Zinc Sheets—11c. per lb., f.o.b. works.

Refractories

Chrome Brick—$40@$48 per net ton, f.o.b. shipping point.

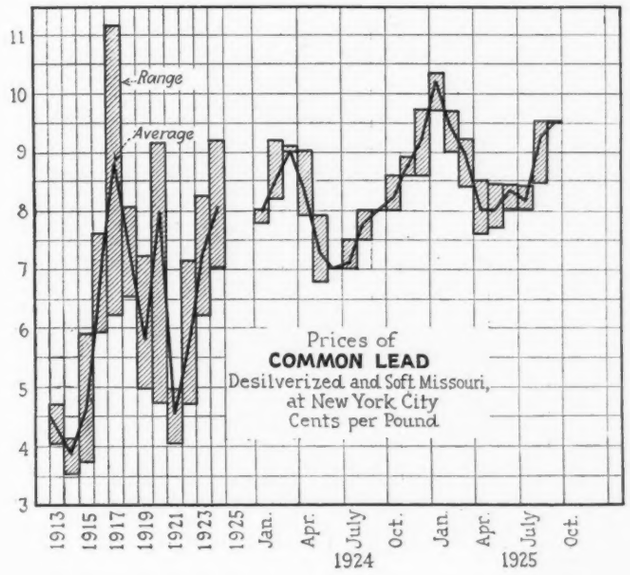
Firebrick—First quality, $43@$46 per M., Ohio, Kentucky, Central Pennsylvania; second quality, $35@$40.

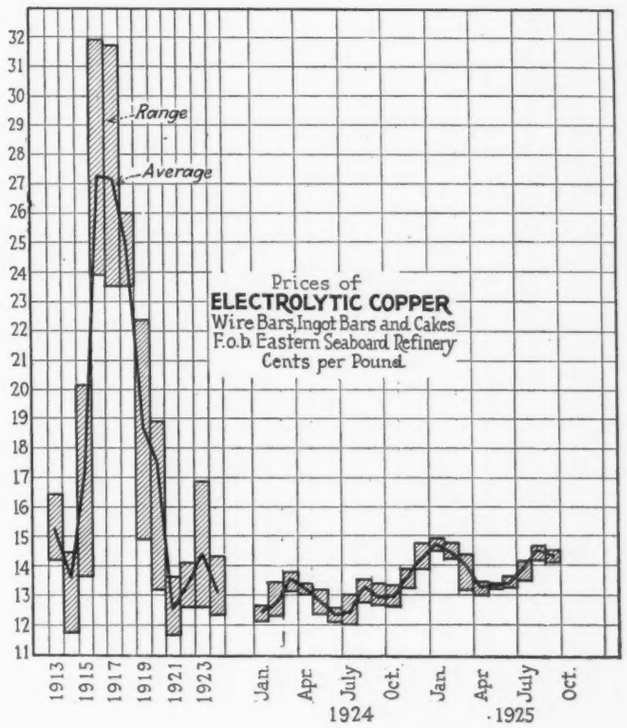
Magnesite Brick—9-in. straights, $65 per net ton, f.o.b. works.

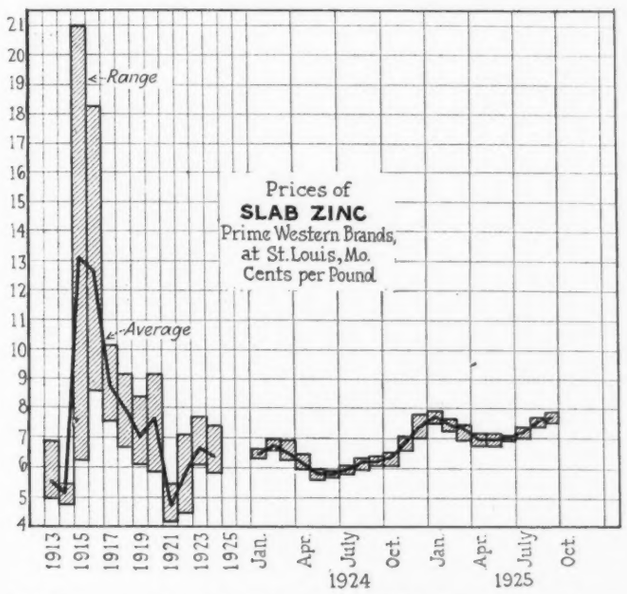
Silica Brick—$40 per M. Pennsylvania and Ohio, $48@$52 Alabama.

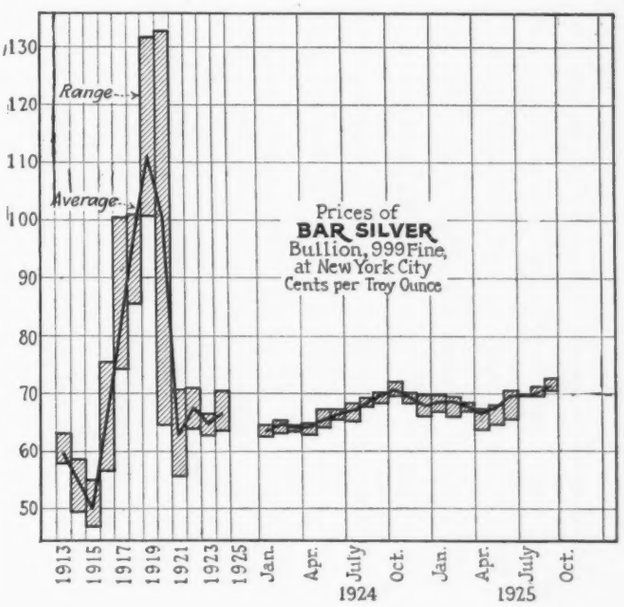
[1]**Zirkite**—Powdered, 80 per cent ZrO_2, 2½c. per lb. Brick, straights, 80c.@$1 each.

Metal Price Curves

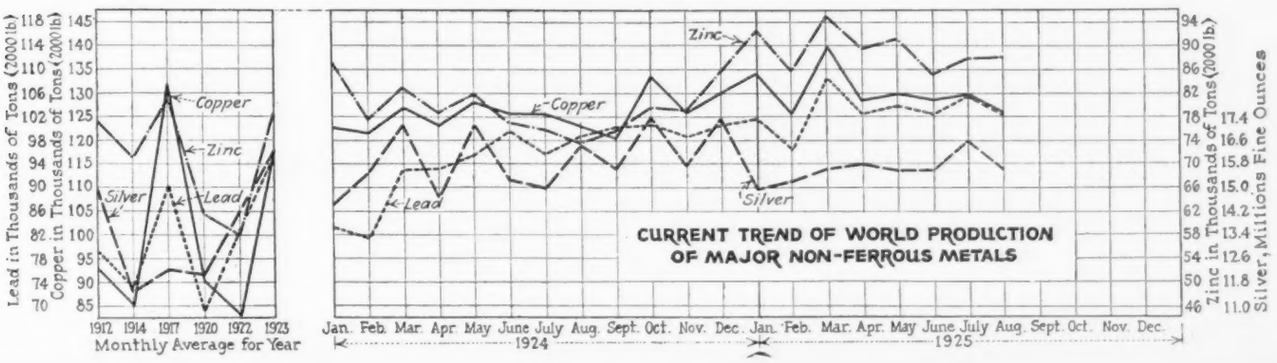








THE curves below are not to be considered as permanent records of production. They show merely the current trend according to latest estimates of the American Bureau of Metal Statistics. The figure for copper represents reports from countries producing about 97 per cent of the world's total in 1923 and 1924, to which is added an estimate for the remaining 3 per cent. Countries that in 1923 and 1924 produced 78.5 per cent of the lead, 87.5 per cent of the zinc, and 81 per cent of the silver are represented in the respective curves, with no estimate for non-reporting countries.


Lead in Thousands of Tons (2000 lb)
Copper in Thousands of Tons (2000 lb)
Zinc in Thousands of Tons (2000 lb)
Silver, Millions Fine Ounces
Copper
Zinc
Silver
Lead
1912 1914 1917 1920 1922 1923
Monthly Average for Year
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1924 1925
CURRENT TREND OF WORLD PRODUCTION
OF MAJOR NON-FERROUS METALS

Metal Statistics

Monthly Average Prices of Metals

Silver

	New York		London		Sterling Exchange	
	1924	1925	1924	1925	1924	1925
January	63.447	68.447	33.549	32.197	425.524	477.702
February	64.359	68.472	33.565	32.245	430.457	476.886
March	63.957	67.808	33.483	31.935	428.769	477.279
April	64.139	66.899	33.065	31.372	434.788	479.034
May	65.524	67.580	33.870	31.276	435.716	484.960
June	66.690	69.106	34.758	31.863	431.675	485.553
July	67.159	69.442	34.509	31.954	436.649	485.514
August	68.519	70.240	34.213	32.268	449.510	485.264
September	69.350	71.570	34.032	32.983	445.740	484.270
October	70.827	.....	35.387	.....	448.274	.....
November	69.299	.....	33.775	.....	460.543	.....
December	68.096	.....	32.620	.....	469.115	.....
Year	66.781	.....	33.969	.....	441.397	.....

New York quotations, cents per ounce troy, 999 fine, foreign silver. London pence per ounce, sterling silver, 925 fine.

Copper

	New York		London			
	Electrolytic		Standard		Electrolytic	
	1924	1925	1924	1925	1924	1925
January	12.401	14.709	61.273	66.065	67.193	70.607
February	12.708	14.463	63.113	64.713	68.167	69.525
March	13.515	14.004	66.137	62.892	72.087	67.739
April	13.206	13.252	64.338	60.575	70.150	64.194
May	12.772	13.347	62.006	60.131	67.648	63.560
June	12.327	13.399	61.375	59.899	66.313	63.369
July	12.390	13.946	61.652	61.467	65.815	65.750
August	13.221	14.490	63.481	62.613	67.800	68.169
September	12.917	14.376	62.750	61.886	67.125	67.693
October	12.933	.....	62.641	.....	66.620	.....
November	13.635	.....	63.731	.....	68.063	.....
December	14.260	.....	65.295	.....	69.762	.....
Year	13.024	.....	63.149	.....	68.062	.....

New York quotations, cents per pound. London, pounds sterling per long ton.

Lead

	New York		St. Louis		London	
	1924	1925	1924	1925	1924	1925
January	7.972	10.169	8.002	9.953	31.528	41.443
February	8.554	9.428	8.643	9.126	34.589	37.944
March	9.013	8.914	8.891	8.578	37.161	36.804
April	8.263	8.005	7.932	7.662	32.819	32.791
May	7.269	7.985	6.973	7.780	29.426	32.283
June	7.020	8.321	6.848	8.024	32.138	33.479
July	7.117	8.151	6.886	8.054	32.916	34.698
August	7.827	9.192	7.764	9.284	32.728	38.188
September	8.000	9.508	7.876	9.303	33.023	38.884
October	8.235	.....	8.118	.....	35.715	.....
November	8.689	.....	8.590	.....	39.425	.....
December	9.207	.....	9.106	.....	41.583	.....
Year	8.097	.....	7.969	.....	34.421	.....

New York and St. Louis quotations, cents per pound. London, pounds sterling per long ton.

Tin

	New York				London	
	99%		Straits			
	1924	1925	1924	1925	1924	1925
January	48.250	57.692	48.750	58.250	246.790	265.560
February	52.772	56.517	53.272	57.068	272.399	262.181
March	54.370	53.038	54.870	53.733	277.429	245.682
April	49.457	51.380	49.957	52.135	250.863	237.006
May	43.611	53.675	44.111	54.620	218.511	245.476
June	42.265	54.885	42.765	55.957	219.219	252.476
July	45.750	56.683	46.250	58.014	233.332	258.435
August	51.409	56.649	51.909	58.190	254.638	258.538
September	48.595	56.405	49.095	58.247	243.511	259.182
October	50.038	.....	50.538	.....	248.543	.....
November	53.848	.....	54.348	.....	257.738	.....
December	55.721	.....	56.245	.....	261.875	.....
Year	49.674	.....	50.176	.....	248.737	.....

New York quotations, cents per pound. London, pounds sterling per long ton.

Zinc

	St. Louis		London		
	1924	1925	1924	1925 Spot	1925 3 M
January	6.426	7.738	34.761	37.917	.....
February	6.756	7.480	36.518	36.528	.....
March	6.488	7.319	35.298	35.741	.....
April	6.121	6.985	32.588	34.644	.....
May	5.793	6.951	30.648	34.223	.....
June	5.792	6.990	31.788	34.149	.....
July	5.898	7.206	32.193	34.894	34.511
August	6.175	7.576	32.544	36.691	36.219
September	6.181	7.753	32.926	37.435	36.719
October	6.324	.....	33.514	.....	.....
November	6.796	.....	35.022	.....	.....
December	7.374	.....	36.932	.....	.....
Year	6.344	.....	33.728	.....	.....

St. Louis quotations, cents per pound. London, pounds sterling per long ton.

Antimony, Quicksilver and Platinum

	Antimony (a)		Quicksilver (b)		Platinum (c)		
	New York		New York		Refined New York		Crude
	1924	1925	1924	1925	1924	1925	1925
January	10.279	17.428	59.500	81.596	122.115	117.000	111.663
February	10.935	19.795	59.565	79.386	124.739	117.000	114.216
March	11.442	15.553	64.269	80.481	121.692	117.000	115.000
April	9.952	12.553	74.308	82.327	115.577	118.269	114.769
May	8.755	15.770	76.962	81.360	115.731	119.850	115.000
June	8.403	16.500	73.720	83.154	116.000	120.000	115.000
July	8.477	17.779	72.173	83.077	118.231	120.000	114.346
August	9.839	17.683	72.096	82.317	120.000	120.000	113.538
September	11.022	17.143	72.423	81.730	118.923	120.000	113.710
October	11.519	.....	70.654	.....	118.000	.....	.....
November	14.385	.....	68.708	.....	117.792	.....	.....
December	15.024	.....	72.750	.....	117.000	.....	.....
Year	10.836	.....	69.761	.....	118.817	.....	.....

(a) Antimony quotations in cents per pound for ordinary brands. (b) Quicksilver in dollars per flask. (c) Platinum in dollars per ounce.

Pig Iron, Pittsburgh

	Bessemer		Basic		No. 2 Foundry	
	1924	1925	1924	1925	1924	1925
January	24.76	24.66	23.76	23.76	23.88	23.76
February	25.26	24.50	23.76	23.26	25.06	23.76
March	25.14	24.06	23.76	23.06	24.76	22.91
April	24.56	22.89	23.26	21.76	23.80	22.26
May	23.89	21.57	22.08	20.26	22.91	21.16
June	22.90	20.76	21.49	19.76	21.48	20.11
July	21.90	20.76	20.76	19.76	20.76	20.26
August	21.76	20.76	20.76	19.76	20.99	19.26
September	21.76	.....	20.76	.....	21.68	.....
October	21.76	.....	20.26	.....	21.26	.....
November	22.08	.....	21.44	.....	21.17	.....
December	23.65	.....	22.04	.....	22.86	.....
Year	23.28	.....	22.01	.....	22.55	.....

In dollars per long ton.

Monthly Crude Copper Output in Short Tons

	1925				
	April	May	June	July	August
Domestic					
Alaska shipments	3,665	2,877	2,848	3,643	67
Calumet & Arizona	2,598	2,235	1,924	1,876	1,970
Miami	2,194	2,209	2,190	1,861	2,350
New Cornelia	3,168	3,346	3,115	2,834	2,460
Old Dominion	1,275	1,418	1,381	1,120	1,030
Phelps Dodge	6,898	7,054	7,214	6,878	6,600
United Verde Extension	1,905	1,812	1,565	1,931	1,928
Tennessee Copper	.....	.....	.....	549	610
Imports: Ore and concentrates, matte	9,011	12,638	6,898	5,261	6,485
Imports of black and blister, unrefined	20,128	15,706	26,349	16,796	23,309
Imports of refined and old	4,254	4,386	7,298	2,461	4,348
Foreign					
Boleo, Mexico	55	.....	847	791	832
Falcon Mines, Rhodesia	.....	.....	.....	211	.....
Furukawa, Japan	1,684	1,315	1,390	1,615	.....
Granby Cons., Canada	1,058	1,765	1,653	1,620	1,669
Katanga, Africa	7,717	8,998	9,415	9,045	10,000
Mount Morgan, Aust.	361	499	403	415	.....
Mount Lyell, Aust.	.....	.....	2,021(a)	.....	.....
Phelps Dodge, Mexican	1,641	1,573	1,764	1,982	2,118
Sumitomo, Japan	1,723	569	1,412	1,570	.....

(a) Three months.

Monthly Production of Primary Copper from U. S. Mines and Daily Rate (Short Tons)

	1923		1924		1925	
	Monthly Production	Daily Rate	Monthly Production	Daily Rate	Monthly Production	Daily Rate
January	56,134	1,811	66,631	2,149	74,789	2,412
February	51,368	1,834	65,681	2,205	68,967	2,463
March	60,781	1,961	65,181	2,103	74,901	2,416
April	59,078	1,969	66,073	2,202	70,667	2,356
May	62,718	2,023	65,608	2,116	70,574	2,276
June	62,740	2,091	63,933	2,131	69,894	2,330
July	63,071	2,034	64,787	2,090	68,507	2,210
August	65,865	2,125	66,756	2,153	68,574	2,212
September	62,255	2,075	63,800	2,127	.....	.....
October	66,035	2,130	68,989	2,225	.....	.....
November	63,885	2,129	68,291	2,276	.....	.....
December	64,832	2,091	67,647	2,182	.....	.....
Total	738,763	.....	793,377	.....	566,873	.....
Monthly average	61,564	.....	66,115	.....	70,859	.....
Average of daily rates	.....	2,024	.....	2,168	.....	2,333

Imports and Exports of Ores and Metals in August, 1924 and 1925

Compiled by the U. S. Department of Commerce

In pounds unless otherwise specified

Imports

	August, 1924	August, 1925
Antimony		
Ore	54,429	.....
Liquated, regulus or metal	164,444	3,016,590
Copper		
Ores	7,311,201	8,955,924
Concentrates	5,018,145	3,849,587
Regulus, coarse metal and cement copper	24,845	165,011
Imported from		
Spain	974,599	664,275
Canada	2,073,966	3,912,199
Mexico	2,128,722	2,376,736
Cuba	2,685,000	1,818,880
Chile	3,687,191	3,789,040
Colombia	93	.....
Peru	115,760	56,603
Venezuela	.....	.....
Other countries	688,860	352,729
Unrefined, black, blister and converter copper in pigs, bars and other forms	29,215,759	46,618,905
From		
Spain	1,486,304	5,094,264
United Kingdom	13,182	2,243,275
Canada	4,302,269	5,811,119
Mexico	3,843,264	6,189,758
Chile	4,097,634	2,256,982
Peru	6,936,387	13,240,588
Portuguese Africa	8,536,719	10,713,948
Other countries	.....	1,068,971
Refined copper	16,227,761	7,707,045
Old and clippings for remanufacture	309,401	989,918
Composition metal, copper chief value	100,161	22,758
Copper manufactures	9,792	5,271
Brass		
Old and clippings for remanufacture	425,931	1,090,995
Manufactures of brass	74,422	99,585
Lead		
Ore and matte	14,325,950	10,219,950
Bullion or base bullion	8,808,908	9,134,796
Pigs, bars, other forms, and old	296,087	21,086
Manufactures of, except type metal	15,897	26,839
Manganese ore, long tons	16,182	34,234
Pyrites, long tons	28,210	19,455
Tin		
Tin ore, tons	8	1
In blocks, bars and pigs	7,336,145	17,353,524
From		
United Kingdom	1,568,464	5,048,109
British Straits Settlements	5,433,477	10,790,579
Dutch East Indies	76,311	223,735
Hongkong	168,090	190,482
Australia	11,200	100,800
Other countries	78,603	999,819
Zinc		
Ore, Free	67,607	230
Dutiable	6,733,347	3,432,260
Blocks, pigs and other forms	.....	10,759
Zinc dust	7,114	29,122

Exports of Copper, Lead and Zinc

	August, 1924	August, 1925
Copper		
Ores, concentrates, matte and regulus	5,007	11,265
Copper and manufactures of	84,191,069	78,531,356
Refined in ingots, bars and other forms	72,873,282	68,863,722
Exported to:		
Belgium	6,557,594	6,737,317
France	13,719,750	6,905,809
Germany	8,992,069	15,918,674
Italy	7,995,853	12,614,400
Netherlands	3,588,295	6,191,373
Spain	585,582	886,463
Sweden	1,225,834	2,269,484
United Kingdom	18,506,411	14,003,688
Canada	2,028,662	1,630,599
China	5,185,600	224,000
Japan	3,803,585	1,064,066
Other countries	1,184,048	417,849
Old and scrap copper	238,594	690,943
Pipes and tubes	306,989	432,641
Plates and sheets	442,242	786,352
Rods	6,931,748	4,990,166
Wire	983,575	805,540
Insulated copper wire and cable	2,244,507	1,679,849
Other manufactures of copper	170,131	282,143
Lead		
Pigs, bars, and other forms:		
From domestic ore	1,262,255	1,717,036
From foreign ore	15,757,982	15,118,155
Exported to:		
France	1,342,750	2,307,526
Germany	3,978,925	4,640,272
Italy	168,091	590,129
Netherlands	951,881	.....
United Kingdom	7,270,845	6,160,619
Other Europe	463,722	1,008,141
Brazil	873,733	458,960
Japan	672,000	112,028
Argentina	1,075,715	448,067
Zinc		
Dross	.....	3,205,497
Ores and concentrates	1,683	9,323
Zinc (spelter) in slabs, blocks, or pigs	14,290,311	9,862,128
Exported to		
Belgium	478,131	223,973
France	1,263,793	1,176,287
Germany	336,118	608,252
Italy	1,624,394	2,038,555
United Kingdom	10,341,311	4,477,601
Other Europe	112,059	414,392
Canada	11,219	10,650
Japan	1,147	.....
Other countries	122,139	912,418
In sheets, strips and other forms	488,385	986,792
Zinc dust	444,613	303,716
Other zinc manufactures	48,614	44,907

United States S. R. & M. Co.

Various Metals; United States and Mexico

The report of the United States Smelting, Refining & Mining Co. for the eight months ended Aug. 31, 1925, shows consolidated net earnings of $2,426,755 after interest, depreciation, depletion and amortization, equivalent after preferred dividends to $3.67 a share (par $50) earned on outstanding 351,115 shares of common stock. This compares with $1,821,110, or $1.95 a share in first eight months of 1924.

The consolidated income account for eight months ended Aug. 31, 1925, compares as follows:

Income Account, 1923, 1924, 1925

	1925	1924	1923
Profit after interest	$4,280,150	$3,252,883	$2,734,001
Depreciation, depletion and amortization	1,853,395	1,431,773	1,094,568
Net profit	$2,426,755	$1,821,110	$1,639,443
Preferred dividends	1,134,817	1,134,816	1,134,816
Surplus	$1,291,938	$688,294	$504,627

A statement issued by the company says:

"Improvement in earnings from the properties in the United States, as reported in the last quarterly statement, has been more than maintained in the present quarter. This is due to the continuing satisfactory metal prices, increased production, and improved operating results.

"Earnings from the Mexican properties for the eight months of this year are substantially the same as during the corresponding period last year. Production of approximately 100,000 tons per month is being maintained.

"Program of development and exploration at the properties in Alaska is being carried out. As reported in the last quarterly statement, this program does not contemplate material earnings from this source during the present season."

Iron-Ore Shipments From Upper Lake Ports Exceed Last Year's

Shipments of iron ore from Upper Lake ports to Sept. 1 were 35,457,153 gross tons, an increase of 6,660,444 tons over the shipment of 28,796,709 tons for the same period in 1924. Total shipments from Upper Lake ports for month of August were 8,532,718 tons, compared with 6,689,567 tons in August, 1924.

Receipts of iron ore at Lake Erie docks for August were 6,228,144 tons, compared with 4,973,693 tons in August, 1924. Season receipts at Lake Erie docks Sept. 1 were 24,660,329 tons, against 20,183,830 tons to Sept. 1, 1924, a substantial increase.

Shipments of iron ore from Lake Erie docks for August of this year and for the season to Sept. 1 were 4,158,185 tons and 18,055,199 tons respectively, comparing with 3,080,829 tons and 15,271,914 tons respectively in 1924. Ore on Lake Erie docks on Sept. 1 was 6,333,420 tons, compared with 6,454,724 tons on Sept. 1, 1924.

At other than Lake Erie ports 2,143,060 tons of iron ore was received in August and 9,378,263 tons for the season to Sept. 1. These figures compare with 1,517,496 and 7,348,107 respectively for last year. Total receipts at Lower Lake ports for August were 8,371,204 tons and for the season 34,038,592 tons.

Mining Stocks—Week Ended September 26, 1925

Stock	Exch.	High	Low	Last	Last Div.
COPPER					
Anaconda	New York	45⅛	42⅛	43	Oc.17, No.23, Q 0.75
Arcadian Consol.	Boston	1	*90	*90	
Ariz. Com'l.	Boston	14	12½	12½	Jy.21, Jy 31 SA 0.50
Calaveras	N. Y. Curb	1⅞	1⅞	1⅞	
Calumet & Arizona	New York	51½	50⅛	50⅛	Se.4, Se.21 Q 1.00
Calumet & Hecla	Boston	15⅛	14⅛	14⅛	Au.31, Se.15 Q 0.50
Canario Copper	N. Y. Curb	7⅛	7	7⅛	
Cerro de Pasco	New York	54⅛	52⅜	53⅛	Au.21, Se.1, Q 1.00
Chile Copper	New York	35⅛	34	34⅛	Sep. 2, Sep. 28, Q 0.62½
Chino	New York	22	21⅛	21⅛	Sept., 1920 0.37½
Con. Coppermines	N. Y. Curb	2⅛	2	2⅛	
Copper Range	Boston	21⅞	20	20	Ap.9, My.4 1.00
Crystal Copper	Boston Curb	*46	*35	*40	
East Butte	Boston	4⅞	4	4⅛	Dec., 1919 0.50
First National	Boston Curb	*17	*16	*16	Feb., 1919 0.15
Franklin	Boston	*85	*80	*80	
Granby Consol.	New York	18⅜	17½	17⅜	May, 1919 1.25
Greene-Cananea	New York	13¾	12⅜	12⅜	Nov., 1920 0.50
Hancock	Boston	*75	*75	*75	
HoweSound,new,r t.c.	New York	24½	23	23½	Oc.5, Oc.15 Q 0.50
Inspiration Consl	New York	28⅛	26	26	Se.17, Oc 5, Q 0.50
Iron Cap	Boston Curb	2⅜	2⅛	2⅜	May, 1923 0.15
Isle Royale	Boston	13¼	12⅛	12⅜	Sept., 1923 0.50
Jerome Verde Dev	N. Y. Curb	*75	*73	*75	
Kennecott	New York	55⅞	53⅝	53⅝	Se.11, Oct.1 Q 0.75
Lake Copper	Boston	1⅛	1	1⅛	Jn.1, Jn 15 Q 0.50
Magma Copper	NewYork	43⅞	42⅛	42⅛	Oct.1, Oct.15. 0.75
Mason Valley	N. Y. Curb	2	2	2	
Mass Consolidated	Boston	*80	*50	*80	Nov., 1917 1.00
Miami Copper	New York	9¼	9⅛	9⅛	Au.1 Au.15 Q 0.25
Mohawk	Boston	33	31	31	Aug. 1, Sept. 2 1.00
Mother Lode Coal	New York	7⅜	7⅜	7⅜	Jn. 12, Jn. 30 0.37½
Nevada Consol.	New York	13⅛	12⅜	12⅝	Sept., 1920 0.25
New Cornelia	Boston	19⅜	19⅛	19⅛	Aug. 7, Aug. 24 0.25
North Butte	Boston	1⅛	1	1⅛	Oct., 1918 0.25
Ohio Copper	N. Y. Curb	*88	*80	*85	No.14, De.2 0.05
Old Dominion	Boston	20⅜	19	19⅛	Dec., 1918 1.00
Phelps Dodge	Open Mar.	†129	†127		Se.19, Oc.2 Q 1.00
Quincy	Boston	25⅛	24⅛	24⅛	Mar., 1920 1.00
Ray Consolidated	New York	13⅜	13¼	13¼	Dec., 1920 0.25
Ray Hercules	N. Y. Curb			14	
St. Mary's Min. Ld.	Boston	35	34	34	Ap. 20, My.20, 3.00
Shannon	Boston	*55	*55	*55	Nov., 1917 0.25
Shattuck Arizona	New York	6	6	6	Jan., 1920 0.25
Superior & Boston	Boston	1¼	1⅛	1⅛	
Tenn. C. & C.	New York	11	10⅜	11⅜	De.31, Ja.15,Q 0.25
United Verde Ex	N. Y. Curb	28⅛	26⅛	26½	Oc. 6, Nov. 20 0.75
Utah Copper	New York			100	Se.18, Se 30, Q 1.00
Utah Metal & T	Boston	*88	*75	*81	Dec., 1917 0.30
Victoria	Boston			*40	
Walker Mining	Salt Lake	2.07½	2.05	2.05	
NICKEL-COPPER					
Internat. Nickel	New York	34⅛	33⅛	33⅜	Se.11, Se.30, Q 0.50
Internat. Nickel pfd.	New York	99⅞	99⅞	99⅞	Jy.16, Au.1, Q 1.50
LEAD					
Carnegie Lead & Zinc	Pittsburgh			6⅜	
Gladstone M. M. Co.	Spokane	*26½	25½	*25½	Jy. 1, Jy. 10 0.01
National Lead	New York	164¼	156½	156½	Sep.11, Sep.30 2.00
National Lead pfd.	New York	116	116	116	Aug.21, Sep 15 1.75
St. Joseph Lead	New York	45	42	44½	De.10,De.21,Ex 1.00
ZINC					
Am. Z. L. & S.	New York	7⅝	7⅛	7⅛	May, 1920 1.00
Am. Z. L. & S. pfd.	New York	30¼	30	30¼	Nov., 1920 1.50
Butte C. & Z.	New York	6⅜	6⅛	6⅛	De.10, De.24 0.50
Butte & Superior	New York	12¼	10⅜	11	Se.18, Se.30 0.50
Callahan Zn-Ld.	New York	2⅛	2	2⅛	Dec., 1920 0.50
New Jersey Zn.	N. Y. Curb			193⅛	Jn.20,Jy.10 Ex. 2.00
United Zinc	N. Y. Curb			*35	
Yellow Pine	Los Angeles	*70	*66	*68	De.10,De.15 Q 0.04
GOLD					
Alaska Juneau	New York	2⅛	1⅞	2	
Argonaut	Toronto	*26½	*24	*25⅜	
Barry-Hollinger	Toronto	*21	*20	*20½	
Carson Hill	Boston	*40	*40	*40	
Consol. W. Dome L.	Toronto	*12⅞	*12⅜	*12⅜	
Cresson Consol. G.	N. Y. Curb	2⅜	2⅛	2⅛	Se.30, Oc.10 0.10
Crown Reserve	Toronto	*16½	*16	*16	Jan., 1917 0.05
Dome Mines	New York	15¼	14⅞	14⅞	Se.30, Oct.20,Q 0.50
Golden Cycle	Colo. Springs			1.51	Dec.11, 1924 0.03
Hollinger Consol.	Toronto	15.50	15.25	15.45	Se.21, Oc. 7 0.08
Homestake Mining	New York	4[illegible]	48	48	Se.19 Se.25 M 0.50
Kirkland Lake	Toronto	*40¾	*34½	*39	
Lake Shore	Toronto	7.90	6.58	7.60	Se.1, Se.15. 0.05
McIntyre-Porcupine	New York	19	18⅜	19	Aug.1, Sept.1 0.25
Newray	Toronto	*23	*22½	*22½	
Night Hawk Pen.	Toronto			*20	
Portland	Colo. Springs			*43	Oct., 1920 0.01
Rand Mines	New York			36½	Au.17, Au.25 1.52
Teck-Hughes	Toronto	1.96	1.85	1.94	
Tom Reed	Los Angeles	*65	*50	*60	Dec., 1919 0.02
Tough-Oakes	Toronto	*48½	*46	*46½	
United Eastern	N. Y. Curb	*52	*50	*51	July, 1924 0.05
Vipond Cons.	Toronto	1.18	1.08	1.17	
Wright-Hargreaves	Toronto	6.00	5.60	5.95	Se.15, Oc.1 Q Ex. 0.5
GOLD AND SILVER					
Black Oak	N. Y. Curb			*81	
Con. Cortez	N. Y. Curb			*8	
Con. Virginia	San Francisco	5⅛	5⅛	5⅛	
Continental Mines	N. Y. Curb	1	1	1	
Dolores Esperanza	N. Y. Curb			*50	July, 1923 0.05
Premier Gold	N. Y. Curb	2⅜	2⅛	2⅛	Se.18, Oc.3, 0.08
Tonopah Belmont	N. Y. Curb	*70	*70	*70	Sep. 15, Oct. 1, 0.05
Tonopah Divide	N. Y. Curb			*23	Oct., 1923 0.10
Tonopah Extension	N. Y. Curb	1⅛	1 1/16	1⅛	Mh.11, Ap.1, Q 0.05
Tonopah Mining	N. Y. Curb	4⅛	4 1/16	4⅛	Se.30, Oc.21, 0.07½
Unity Gold	N. Y. Curb	*62	*49	*55	
West End Consol.	N. Y. Curb			*50	Mar., 1923 0.05
Yukon Gold	N. Y. Curb			*30	June, 1918 0.02

Stock	Exch.	High	Low	Last	Last Div.
SILVER					
Alvarado	Boston Curb	†1	†*25		Oct., 1920 0.50
Beaver Consol.	Toronto	*29	*25	*28	May, 1920 0.03
Castle-Trethewey	Toronto	1.18	1.14	1.17	
Coniagas	Toronto	1.75	1.55	1.74	May, 1924 0.12½
Keeley	Toronto	1.67	1.50	1.65	Au.31,Se.15RX 0.12
Kerr Lake	N. Y. Curb	1⅛	1⅛	1⅛	Oc.1, Oc.15 Q 0.12½
La Rose	Toronto	*40	*37⅜	*39	Apr., 1922 0.10½
Lorrain Trout Lake	Toronto	*95	*90	*90	Jy. 2, Jy.15 0.05
McKinley-Dar.-Sav.	Toronto	*20½	*19½	*20	Oct., 1920 0.03
Mining Corp. Can.	Toronto	2.93	2.85	2.92	Jy.1, Jy.15 0.12½
Nipissing	N. Y. Curb	4⅞	4½	4⅝	Se.30, Oc.20, Q 0.15
Ontario Silver	New York	7⅞	7⅜	7⅜	Jan., 1919 0.50
Temiskaming	Toronto	*17½	*17	*17	Jan., 1920 0.40
SILVER-LEAD					
Ahumada	New York	11	10	10⅛	Se.19,Oc.2,QEx 0.25
Bingham Mines	Boston	59	48	56	Se.19, Se.30 Q 0.50
Cardiff M. & M.	Salt Lake	*76	*64	*65	De.16, No.18 0.10
Chief Consol.	Salt Lake	2.90	2.90	2.90	Ap 10. My. 1 0.10
Columbus Rexall	Salt Lake			*7	Aug., 1923 0.05
Eureaon	Boston Curb	2⅜	2⅛	2⅛	Se.19,Oc.2,QEx 0.15
Federal M. & S.	New York	23	18⅛	23	Fe.26, Mh.15 Q 1.75
Federal M. & S. pfd.	New York	63¼	61⅛	61⅛	Au.25, Se.15, 1.75
Hecla Mining	N. Y. Curb	17	15⅜	15⅜	Au.15, Se.15 Q 0.50
Iron Blossom Con.	Salt Lake			*39	Oc.25, 1924 0.01½
Iron Kng Mining	Salt Lake	*52	*50	*50	
Keystone Mining	Salt Lake	*75	*73	*75	Au.12, Au.26 0.07½
LuckyJim	Spokane	13	12⅛	13	
Mammoth Mining	Salt Lake	2.95	2.80	2.80	My.15 My.25 0.10
Marsh Mines	Spokane	*7⅜	*7	*7⅛	Se.15, Oc.1 0.15
Park Utah	Salt Lake	6.25	6.15	6.25	Se.15, Oc.1 0.15
Prince Consol.	Salt Lake	*35	*30	*31½	
Silver King Coal	Salt Lake	9.45	9.40	9.45	Se.20, Oc.1, Q 0.25
Silversmith	Spokane	*24	*21½	*24	Jy.1, Jy.10 0.01
Tamarack-Custer	Spokane	*48	*40	*45	Sept., 1924 0.25
Tintic Standard	Salt Lake	14.00	13.75	13.75	Se.22, Se.29 0.40
Utah-Apex	Boston	7⅛	7	7⅛	Oc.3, Oc.15, Q 0.35
Western Utah Copper	N. Y. Curb			*10	
IRON					
Bethlehem Steel	New York	41⅜	40⅛	40⅛	July, 1924 1.25
Colorado Fuel & Iron	New York	40⅛	38	38⅛	May, 1921 0.75
Gt. North'n Iron Ore	New York	31⅛	30	30⅛	Ap.11, Ap.30 1.00
Inland Steel	New York	43⅜	42⅛	43	Au.14 Sep.1,Q 0.62½
Mesabi Iron	N. Y. Curb	2⅜	2⅛	2⅜	
Replogle Steel	New York	16⅜	15⅛	15⅛	
Republic I. & S.	New York	52	49⅜	49⅛	May, 1921 1.50
Republic I. & S. pfd.	New York	92⅛	91⅛	92	Se.15, Oc.1, Q 1.75
Sloss-Sheffield S. & I.	New York	100	97	97	Se.10, Se.21 Q 1.50
Sloss-Shef. S.&I. pfd.	New York			98	Se.21, Oc.1, Q 1.75
U. S. Steel	New York	124⅛	119⅞	120⅜	Au.29,Au.31,QEx 1.75
U. S. Steel pfd.	New York	125	124⅛	124⅛	Aug. 3, Aug. 29, Q 1.75
Virginia I. C. & C.	New York			37	Jan., 1924 1.50
Virginia I.C.&C.pfd.	New York	70	70	70	Jn.20, Jy.2, 2.50
VANADIUM					
Vanadium Corp.	New York	31⅛	29⅛	29⅜	Aug.1, Aug.15 0.50
ASBESTOS					
Asbestos Corp.	Montreal	92	87	91⅞	Se.30, Oc.15 Q 1.50
Asbestos Corp., pfd.	Montreal	111	108	111	Se.30, Oc. 15, Q 1.50
SULPHUR					
Freeport Texas	New York	17⅛	15⅜	17⅛	Nov., 1919 1.00
Texas Gulf	New York	111	107⅛	109	Au.31, Se.15, Q 2.00
DIAMONDS					
De Beers Consol.	New York			25¼	Jy.27, Au.30 0.97
PLATINUM					
So. Am. Gold & P.	N. Y. Curb	2⅜	2⅜	2⅜	
MINING, SMELTING, REFINING AND GENERAL					
Amer. Metal	New York	51⅞	50	51	Aug. 20, Sep. 1, Q 0.75
Amer. Metal pfd.	New York			116	Aug. 21, Sep. 1, Q 1.75
Amer. Sm. & Ref.	New York	113⅜	110½	110½	Jy.10, Au.1, Q 1.50
Amer.Sm.&Ref.pfd.	New York	113	111⅛	112½	Au.7, Se.1 Q 1.75
Consol. M. & S.	Montreal	118	116½	116½	Jn.30, Jy.15 0.75
Federated Metals	N. Y. Curb	27½	27½	27½	
Newmont Mining	N. Y. Curb	44⅝	44	44⅝	Oc.1, Oc.15 0.60
Southwest Metals	N. Y. Curb			1	
U. S. Sm. R. & M.	New York	48⅜	45½	46⅞	Jy.6, Jy.15 Q 0.75
U.S. Sm. R.&M.pfd.	New York	48	46½	48	Jy.6, Jy.15 Q 0.87½

* Cents per share. † Bid or asked. Q. Quarterly. SA. Semi-annually. M. Monthly. K, Irregular. I. Initial. X. Includes extra. The first date given is that of the closing of the books; the second that of the payment of the dividend.

Boston quotations courtesy Boston Stock Exchange; Toronto quotations those of the Standard Stock Exchange of Toronto, by courtesy of Arthur E. Moysey & Co.; Spokane, Pohlman Investment Co.; Salt Lake, Stock and Mining Exchange and George H. Watson & Co.; Colorado Springs, Colorado Springs Stock Exchange

LONDON QUOTATIONS, WEEK ENDED SEPT. 18, 1925

	High	Low	Last	Date	Per Cent
Aramayo Mines (25 frs.)	77/3	77/—	77/6	Aug. 1925	5(c)
British Platinum	9/3	8/9	9/3	Feb. 1925	2½
Bwana M'Kubwa	6/10½	6/6	6/6		
Camp Bird	2/7½	2/3	2/4½		
El Oro	5/1½	4/10½	5/—	Nov. 1924	2½*
Esperanza	—/9	—/6	—/6		
Frontino & Bolivia	10/9	10/4½	10/6	July 1925	3¼
Mexican Corporation	13/9	13/—	13/6		
Mexico Mines of El Oro	40/6	39/4½	40/6	June 1925	10*
Nechi (pref. 10s.)	1/6	1/3	1/6	1921–22	25
Oroville Dredging	4/9	4/6	4/6	Dec. 1923	3¾
Ouro Preto				May 1925	2½
St. John del Rey	14/6	14/—	14/—	June 1925	6½
San Francisco Mines	26/10½	26/1½	26/6	June 1925	15
Santa Gertrudis	11/—	10/3	10/9	July 1920	5
Selukwe (2s. 6d.)	10/1½	9/—	9/9	April 1917	6¾
S. American Copper	7/3	6/10½	7/—	Nov. 1917	75
Tanganyika	44/9	40/—	42/6	Sept. 1925	5
Tomboy	4/6	4/—	4/3	Sept. 1925	5
Union Minière du Haut-Katanga (Brussels) 100 Fr.			8.050	July 1925	150(b)

*Free of British income tax. (b) Belgian francs. (c) Swiss francs.